

SONY®

DIGITAL VIDEO SWITCHER

DVS-7200A

SWITCHER CONTROL PANEL

BKDS-7015

BKDS-7025/7026

BKDS-2031

BKDS-7090

BKDS-7270

BKDS-2032

BKDS-7091

BKDS-7271

BKDS-2041

BKDS-7103

BKDS-7280

BKDS-2070

BKDS-7110

BKDS-7340

BKDS-7001

BKDS-7111

BKDS-7420

BKDS-7002

BKDS-7113

BKDS-7445

BKDS-7030

BKDS-7133

BKDS-7690

BKDS-7031

BKDS-7161

BZS-7040A

BKDS-7033

BKDS-7163

BZS-7060A

BKDS-7075

BKDS-7250

INSTALLATION MANUAL

1st Edition

警告

このマニュアルは、サービス専用です。

お客様が、このマニュアルに記載された設置や保守、点検、修理など行くと感電や火災、人身事故につながる可能性があります。

危険をさけるため、サービストレーニングを受けた技術者のみご使用ください。

WARNING

This manual is intended for qualified service personnel only.

To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

WARNING

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.

Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegebenen Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

AVERTISSEMENT

Ce manuel est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres. Pour toute réparation faire appel à une personne compétente uniquement.

DVS-7200A	Serial No. 10001 and Higher	BKDS-7161	Serial No. 10001 and Higher
BKDS-2031	Serial No. 10001 and Higher	BKDS-7163	Serial No. 10001 and Higher
BKDS-2032	Serial No. 10001 and Higher	BKDS-7250	Serial No. 10001 and Higher
BKDS-2041	Serial No. 10001 and Higher	BKDS-7270	Serial No. 10001 and Higher
BKDS-2070	Serial No. 10001 and Higher	BKDS-7271	Serial No. 10001 and Higher
BKDS-7001	Serial No. 10001 and Higher	BKDS-7280	Serial No. 10001 and Higher
BKDS-7002	Serial No. 10001 and Higher	BKDS-7340	Serial No. 10001 and Higher
BKDS-7015	Serial No. 10001 and Higher	BKDS-7420	Serial No. 10001 and Higher
BKDS-7025	Serial No. 10001 and Higher	BKDS-7445	Serial No. 10001 and Higher
BKDS-7026	Serial No. 10001 and Higher	BKDS-7690	Serial No. 10001 and Higher
BKDS-7030	Serial No. 10001 and Higher	BZS-7040A	Serial No. 10001 and Higher
BKDS-7031	Serial No. 10001 and Higher	BZS-7060A	Serial No. 10001 and Higher
BKDS-7033	Serial No. 10001 and Higher		
BKDS-7075	Serial No. 10001 and Higher		
BKDS-7090	Serial No. 10001 and Higher		
BKDS-7091	Serial No. 10001 and Higher		
BKDS-7103	Serial No. 10001 and Higher		
BKDS-7110	Serial No. 10001 and Higher		
BKDS-7111	Serial No. 10001 and Higher		
BKDS-7113	Serial No. 10001 and Higher		
BKDS-7133	Serial No. 10001 and Higher		

WARNING

This unit has no power switch.

When installing the unit, incorporate a readily accessible disconnect device in the fixed wiring, or connect the power cord to a socket-outlet which must be provided near the unit and easily accessible, so that the user can turn off the power in case a fault should occur.

WARNUNG

Dieses Gerät hat keinen Netzschalter.

Beim Einbau des Geräts ist daher im Festkabel ein leicht zugänglicher Unterbrecher einzufügen, oder das Netzkabel muß mit einer in der Nähe des Geräts befindlichen, leicht zugänglichen Wandsteckdose verbunden werden, damit sich bei einer Funktionsstörung die Stromversorgung zum Gerät jederzeit unterbrechen läßt.

Attention-when the product is installed in Rack:

1. Prevention against overloading of branch circuit

When this product is installed in a rack and is supplied power from an outlet on the rack, please make sure that the rack does not overload the supply circuit.

2. Providing protective earth

When this product is installed in a rack and is supplied power from an outlet on the rack, please confirm that the outlet is provided with a suitable protective earth connection.

3. Internal air ambient temperature of the rack

When this product is installed in a rack, please make sure that the internal air ambient temperature of the rack is within the specified limit of this product.

4. Prevention against achieving hazardous condition due to uneven mechanical loading

When this product is installed in a rack, please make sure that the rack does not achieve hazardous condition due to uneven mechanical loading.

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Manual Structure

Purpose of this manual

This manual is the installation manual of Digital Video Switcher DVS-7200A. This manual is intended for use by trained system and service engineers, and describes the information when installing DVS-7200A.

Related manuals

The following manuals are prepared for DVS-7200A.
The part numbers of these manuals as of February, 1999 describe.

- **User's Guide (Supplied with BZS-7040A or BZS-7060A)**

This manual describes the application and operation of DVS-7200A

- **Operation Manual (Supplied with DVS-7200A)**

This manual describes the overview, system configuration examples and specifications of options.

- **Maintenance Manual Part 1 (Supplied with DVS-7200A)**

This manual describes the information for the periodic maintenance, and the information for the service with predicated on the replacement of the principal blocks and mounted circuit boards.

Part number : 3-201-866-01

- **Maintenance Manual Part 2**

The following manuals describe the detailed service information. For obtaining, please contact your local Sony's sale/service office.

Volume 1 (Block diagrams and Frame wirings)

Part number : 9-967-615-03

Supplement 4 Part number : 9-967-615-84

Volume 2

(Spare parts, Service overview and Replacement of main parts)

Part number : 9-967-616-03

Supplement 5 Part number : 9-967-616-85

Volume 3 (Semiconductor pin assignments)

Part number : 9-967-617-03

Supplement 3 Part number : 9-967-617-83

Volume 4 (Board layouts)

Part number : 9-967-618-03

Supplement 4 Part number : 9-967-618-84

- **Maintenance Manual Part 2**
Volume 5 (Schematic diagrams 1 A through I)
Part number : 9-967-624-03
Supplement 3 Part number : 9-967-624-83

Volume 6 (Schematic diagrams 2 K through Z)
Part number : 9-967-625-02
Supplement 4 Part number : 9-967-625-84

Contents

This manual is organized by following sections.

Section 1 Installation

This section describes the operating environment, power supply, connectors, input and output signals of connectors, and example of system connection.

Section 2 Installation of DVS-7200A

This section describes the external dimensions and rack mounting.

Section 3 Installation of Control panel

This section describes the external dimensions, installation space, rack mounting and replacement of key tops.

Section 4 Installation of Options

This section describes the installation of plug-in boards, combinations of optional boards and installation of options.

Section 5 Confirmation in Installation

This section describes the switch settings on boards and LEDs description, adjustment of secondary power supply voltage and adjustment of operation power for fader lever.

Section 6 Initial Set-up of System

This section describes the operation and saving of set-up data, installation of program, set-up, saving set-up data to nonvolatile memory.

Section 1

Installation

1-1. Operating Environment

- Install the unit in a well ventilated place to prevent a temperature rise in the unit. Never cover the ventilation holes of the outer frame.
- Never install the unit near a heat source because the environmental temperature during operation should be 5 °C to 40 °C.

1-2. Power Supply

1-2-1. Power Switch for Service (Control panel)

WARNING

The power switches for service of the control panels are placed only in the unit.

When installing the unit, incorporate a readily accessible disconnect device in the fixed wiring, so that the operator/engineer power in case a fault should occur.

1-2-2. Power Specifications

Power requirements : 100 to 240 V AC \pm 10%
50/60 Hz

Current consumption

DVS-7200A : 7 to 3.5 A
BKDS-7015/7025/7026: 1.0 A (max.)

Notes

As the inrush current at turn-on is the maximum 35 A, the capacity of the AC power must be commensurate in it with the inrush current of the maximum 35 A for the processor and the control panel respectively. If the capacity of the AC power is not the adequately large, the breaker of the AC power at the supply side will operate or the unit will abnormal operate.

1-2-3. Power Cord

WARNING

The power cords are not supplied with DVS-7200A and the control panel. Be sure to use the power cords that are applicable to the places in the world.

To avoid a fire or an electric shock, be sure to use the designated power cord. And do not damage to the power cord.

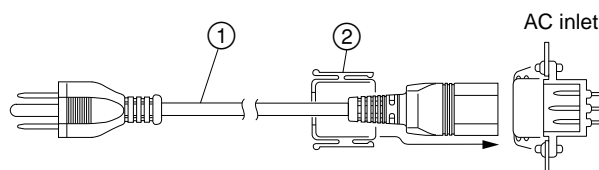
Note

The plug holder is not used for the control panels.

For the customer in the U.S.A. and Canada

Required Parts

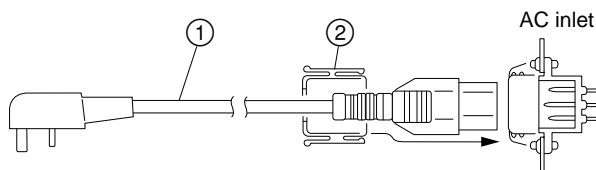
- ① Power Cord, 125 V 10 A (2.4 m) : 1-557-377-11
- ② Plug Holder B (Black) : 2-990-242-01



For the customer in the United Kingdom

Required Parts

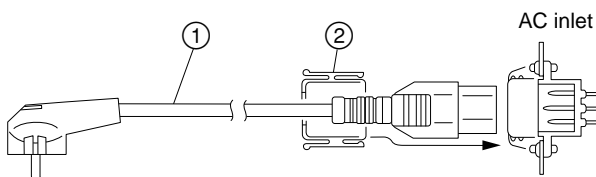
- DK-2401 (EK)
- ① Power Cord, 250 V 10 A (2.4 m)
- ② Plug Holder B (Black) : 2-990-242-01



For the customer in the all European countries except the United Kingdom

Required Parts

- DK-2401 (AE)
- ① Power Cord, 250 V 10 A (2.4 m)
- ② Plug Holder B (Black) : 2-990-242-01



Note

For the customer outside of the area as shown above, please consult with local Sony's sale/service office.

1-3. Connectors

When connecting cables to various connectors on the rear panel at the time of installing, connecting or servicing, connect the following connectors or their equivalents.

1. DVS-7200A

Connector function name on rear panel	Connector parts No. and name of cable
PANEL 1 DME 1 to 4 SERIAL TALLY TERMINAL EDITOR A/REMOTE 1 EDITOR B/REMOTE 2 PANEL 2/REMOTE 3 REMOTE 4	D-sub 9-pin, Male Connector 9-pin, Male 1-560-651-00 ^(※1) Junction Shell 9-pin 1-561-749-00
GPI	D-sub 25-pin, Male Connector 25-pin, Male 1-560-904-11 ^(※1) Junction Shell 25-pin 1-563-377-11
PRIMARY INPUTS 1 to 36 DIRECT INPUT CRK INPUTS 1 to 4 REF INPUT REF OUTPUT AUX BUS OUTPUTS 1 to 13 ME-1 to 2 OUTPUTS DSK PGM OUTPUTS PGM OUTPUTS 1 to 4 CLEAN OUTPUT PVW OUTPUT EDIT PVW OUTPUT MATRIX ^(※4)	BNC Coaxial Connector Plug
AC IN	Main Power Supply Cable (For the details of the cable, refer to Section 1-2-3.)

2. BKDS-7015

Connector function name on rear panel	Connector parts No. and name of cable
SWITCHER ^(※2) DME ^(※2) TERMINAL 1 to 2 ^(※2) REMOTE 1 to 4 ^(※2)	D-sub 9-pin, Male Connector 9-pin, Male 1-560-651-00 ^(※1) Junction Shell 9-pin 1-561-749-00
OPTION PANEL ^(※2)	BVS Cable 1-574-993-11
AC IN ^(※2)	Main Power Supply Cable (For the details of the cable, refer to Section 1-2-3.)

3. BKDS-7025/7026

Connector function name on rear panel	Connector parts No. and name of cable
SWITCHER DME TERMINAL 1 to 2 REMOTE 1 to 5	D-sub 9-pin, Male Connector 9-pin, Male 1-560-651-00 ^(※1) Junction Shell 9-pin 1-561-749-00
GPI	D-sub 25-pin, Male Connector 25-pin, Male 1-560-904-11 ^(※1) Junction Shell 25-pin 1-563-377-11
DISPLAY PANEL OPTION PANEL	BVS Cable ^(※3) 1-574-993-11
AC IN	Main Power Supply Cable (For the details of the cable, refer to Section 1-2-3.)

(※1) : The following solderless contact must be used for the plug.

AWG #18 to #22:1-566-493-00
AWG #22 to #24:1-564-774-00
AWG #24 to #30:1-564-775-00

(※2) : For the customers in europe

When connecting the cables to the following connectors, attach the two ferrite cores that are packed with each model to the two connectors at the both sides of the cable.

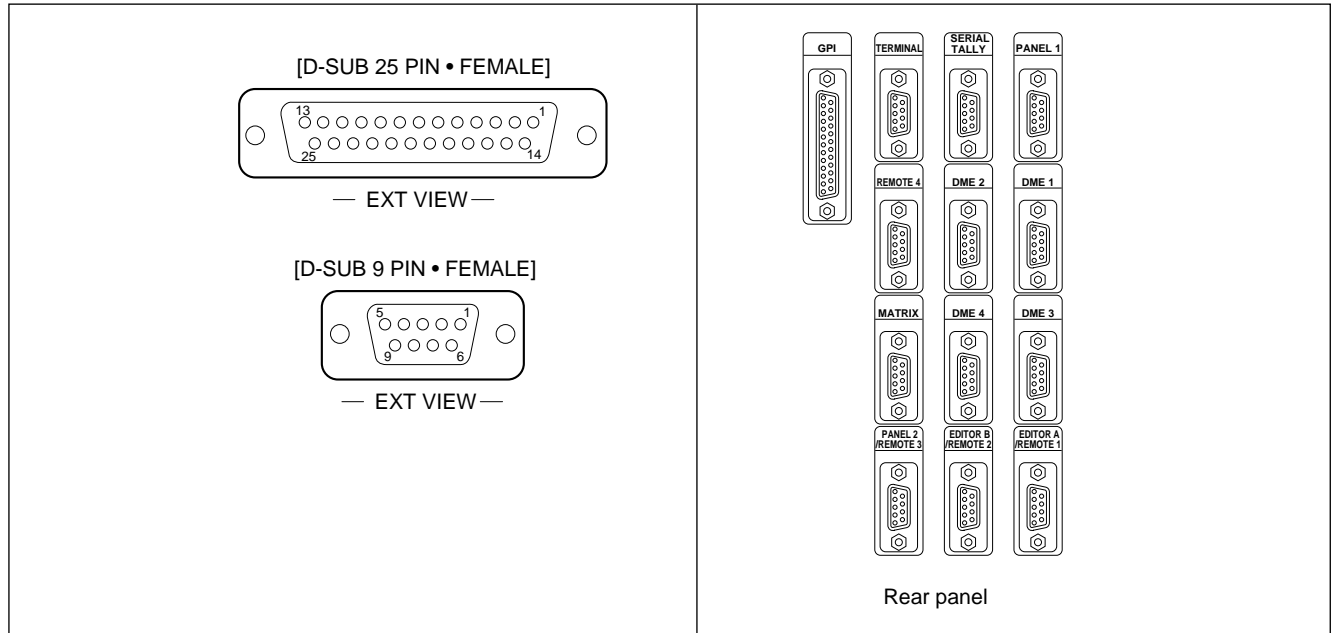
(※3) : A BVS cable is supplied with this unit.

(※4) : Use the 9-pin BNC conversion cable supplied with DVS-7200A.

1-4. Input and Output Signals of Connectors

The input and output signals of the connectors on the rear panel are specified in the following table.
And refer to the following illustration for the pin positions of the connectors.

1-4-1. DVS-7200A



Notes

(*1) <CONTROLLER> : Controlling device

(*2) <DEVICE> : Controlled device

PANEL 1 : RS-422A (D-sub 9-pin•Female)

<DEVICE> (*2) from Control panel BKDS-7015/7025/7026

Pin No.	Signal Name	Function
1	GND	Frame ground
2	TX-A	Transmitted data (–)
3	RX-B	Received data (+)
4	GND	Common ground
5	FIELD (+)	Field signal output (+)
6	GND	Common ground
7	TX-B	Transmitted data (+)
8	RX-A	Received data (–)
9	FIELD (–)	Field signal output (–)

PANEL 2/REMOTE 3 : RS-422A (D-sub 9-pin•Female)

<DEVICE> (*2) from Control panel (*3)

Pin No.	Signal Name	Function
1	GND	Frame ground
2	TX-A	Transmitted data (–)
3	RX-B	Received data (+)
4	GND	Common ground
5	VD-B	Transmitted VD signal (+)
6	GND	Common ground
7	TX-B	Transmitted data (+)
8	RX-A	Received data (–)
9	VD-A	Transmitted VD signal (–)

(*3) : Control Panel BKDS-2010 etc. (PANEL 2)
Keyer Remote Panel BKDS-7060 etc. (REMOTE 3)

SERIAL TALLY : RS-422A (D-sub 9-pin•Female)

<CONTROLLER>(*1)

Note

For the SERIAL TALLY connector, refer to the Protocol Manual of DVS-8000 Series.

Pin No.	Signal Name	Function
1	FG	Frame ground
2	RX-A	Received data (–)
3	TX-B	Transmitted data (+)
4	GND	Common ground
5	–	–
6	GND	Common ground
7	RX-B	Received data (+)
8	TX-A	Transmitted data (–)
9	FG	Frame Ground

DME 1 to 4 : RS-422A (D-sub 9-pin•Female)

<DEVICE>(*2) from Digital multi effects DME-3000/7000 etc.

Pin No.	Signal Name	Function
1	FG	Frame ground
2	TX-A	Transmitted data (–)
3	RX-B	Received data (+)
4	GND	Common ground
5	–	–
6	GND	Common ground
7	TX-B	Transmitted data (+)
8	RX-A	Received data (–)
9	FG	Frame Ground

REMOTE 4 : RS-422A (D-sub 9-pin•Female)

<DEVICE>(*2)

Pin No.	Signal Name	Function
1	FG	Frame ground
2	TX-A	Transmitted data (–)
3	RX-B	Received data (+)
4	GND	Common ground from
5	–	–
6	GND	Common ground
7	TX-B	Transmitted data (+)
8	RX-A	Received data (–)
9	FG	Frame Ground

MATRIX^(※4) : (D-sub 9-pin•Female)

<DEVICE>(*1) to Routing switcher

Pin No.	Signal Name	Function
1	FG	Frame ground
2	GND	Ground
3	DATA	Data
4	GND	Ground
5	–	–
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	FG	Frame Ground

(※4) : If connecting Sony's Routing Switcher DVS-V6464B, use the 9-pin BNC conversion cable supplied with DVS-7200A.

EDITOR A/REMOTE 1 : RS-422A (D-sub 9-pin•Female)

<DEVICE>(*2) from Editor(*5)

Pin No.	Signal Name	Function
1	FG	Frame ground
2	EDT A TX-A	Transmitted data (–)
3	EDT A RX-B	Received data (+)
4	GND	Common ground
5	–	–
6	GND	Common ground
7	EDT A TX-B	Transmitted data (+)
8	EDT A RX-A	Received data (–)
9	FG	Frame Ground

(※5) : Editing control Unit BVE-9100 etc. (EDITOR A)

EDITOR B/REMOTE 2 : RS-422A (D-sub 9-pin•Female)

<DEVICE>(*2) from Editor(*6)

Pin No.	Signal Name	Function
1	FG	Frame ground
2	TX-A	Transmitted data (–)
3	RX-B	Received data (+)
4	GND	Common ground
5	–	–
6	GND	Common ground
7	TX-B	Transmitted data (+)
8	RX-A	Received data (–)
9	FG	Frame Ground

(※6) : Editing control Unit BVE-9100 etc. (EDITOR B)

TERMINAL : RS-232C (D-sub 9-pin•Female)
to Terminal

Pin No.	Signal Name	Function
1	DCD	Data Carrier detect ^(※7)
2	RXD	Received data
3	TXD	Transmitted data
4	DTR	Data terminal ready ^(※7)
5	GND	Ground
6	DSR	Data set ready ^(※7)
7	RTS	Request to send
8	CTS	Clear to send
9	—	—

(※7) : Pins 1, 4 and 6 are short-circuited each other on the CN-1146 board.

GPI : (D-sub 25-pin•Female)

INPUT × 8, TTL

OUTPUT × 4, relay contact 30 V 0.1 A
(resistance load)

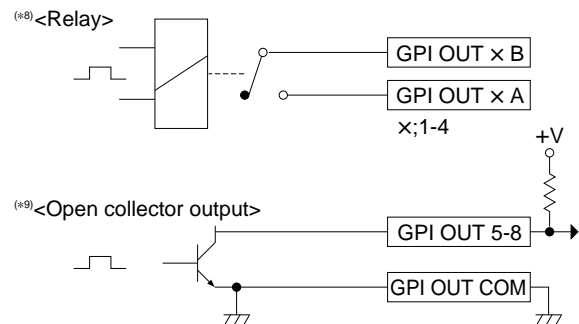
OUTPUT × 4, open collector 30 V rated voltage

GPI timing : Refer to User's Guide

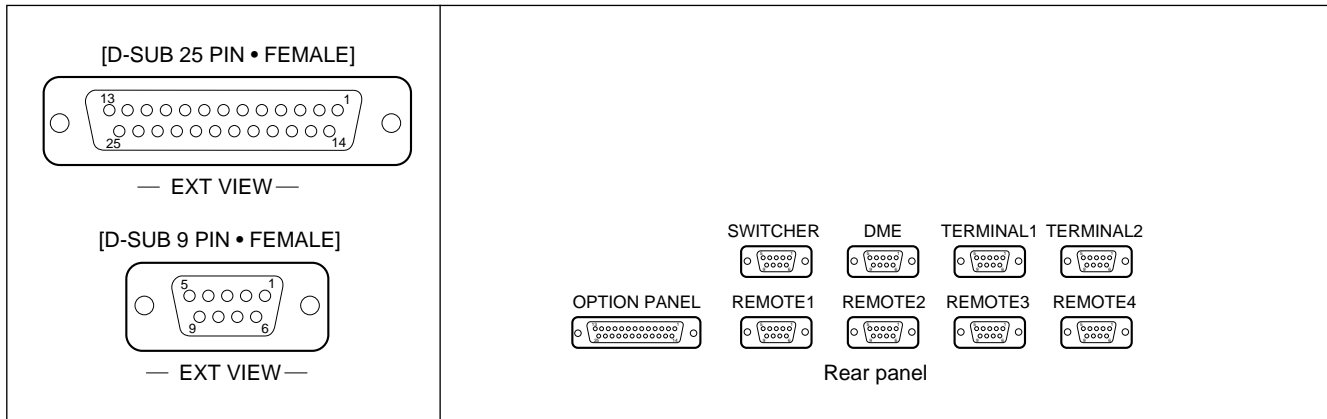
Pin No.	Signal Name	Function
1	GND	Ground
2	GND	Ground
3	GPI IN 2	General-purpose input
4	GPI IN 4	
5	GPI IN 6	
6	GPI IN 8	
7	GPI OUT 1B	General-purpose relay output (B) ^(※8)
8	GPI OUT 2B	
9	GPI OUT 3B	
10	GPI OUT 4B	
11	GPI OUT 6	General-purpose open collector output ^(※9)
12	GPI OUT 8	
13	GPI OUT COM	Ground for open collector output
14	GND	Ground
15	GPI IN 1	General-purpose input
16	GPI IN 3	
17	GPI IN 5	
18	GPI IN 7	
19	GPI OUT 1A	General-purpose relay output (A) ^(※8)
20	GPI OUT 2A	
21	GPI OUT 3A	
22	GPI OUT 4A	
23	GPI OUT 5	General-purpose open collector output ^(※9)
24	GPI OUT 7	
25	GPI OUT COM	Ground for open collector output

Note

A and B of same number constitute a pair of relay contacts.



1-4-2. BKDS-7015



Notes

<CONTROLLER>(*1) : Controlling device

1. Main Panel

SWITCHER : RS-422A (D-sub 9-pin•Female)

<CONTROLLER>(*1) to Processor DVS-7200A

Pin No.	Signal Name	Function
1	FG	Frame ground
2	RX-A	Received data (–)
3	TX-B	Transmitted data (+)
4	GND	Common ground
5	FIELD (+)	Field signal input (+)
6	GND	Common ground
7	RX-B	Received data (+)
8	TX-A	Transmitted data (–)
9	FIELD (–)	Field signal input (–)

DME : RS-422A (D-sub 9-pin•Female)

<CONTROLLER>(*1) to Digital multi effects DME-3000/7000 etc.

Pin No.	Signal Name	Function
1	FG	Frame ground
2	RX-A	Received data (–)
3	TX-B	Transmitted data (+)
4	GND	Common ground
5	–	–
6	GND	Common ground
7	RX-B	Received data (+)
8	TX-A	Transmitted data (–)
9	–	–

REMOTE 1 to 4 (*2) : RS-422A (D-sub 9-pin•Female)

<CONTROLLER>(*1) to External Device

Pin No.	Signal Name	Function
1	FG	Frame ground
2	RX-A	Received data (–)
3	TX-B	Transmitted data (+)
4	GND	Common ground
5	–	–
6	GND	Common ground
7	RX-B	Received data (+)
8	TX-A	Transmitted data (–)
9	–	–

(*2) : BKDS-7001 (Option : IF-523 board) is in need of using the REMOTE from 1 to 4.

TERMINAL 1, 2 : RS-232C (D-sub 9-pin•Female)
to Terminal

Pin No.	Signal Name	Function
1	DCD	Data carrier detect (*3)
2	RXD	Received data
3	TXD	Transmitted data
4	DTR	Data terminal ready (*3)
5	GND	Ground
6	DSR	Data set ready (*3)
7	RTS	Request to send (*4)
8	CTS	Clear to send (*4)
9	–	–

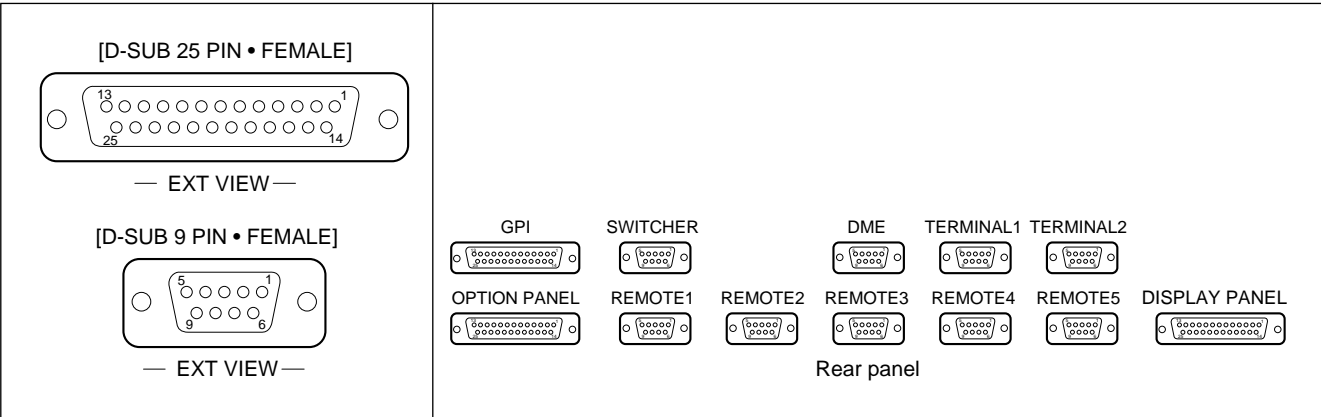
(*3) : Pins 1, 4 and 6 are short-circuited each other on the CN-1143 board.

(*4) : Pins 7 and 8 are short-circuited each other on the CN-1143 board.

OPTION PANEL : (D-sub 25-pin•Female)
to Adaptor box (BKDS-7075)

Pin No.	Signal Name	Function
1	GND	Ground
2	+12 V	Power supply +12 V
3	SCLK	Serial clock for switch read and LED light
4	GND	Ground
5	WDT	LED light data
6	IWLD	Control signal for switch read and LED light
7	GND	Ground
8	TCLK	Serial clock for character display
9	TWDT	Indicate data for character display
10	GND	Ground
11	TBLANK	Disable signal for character display
12	GND	Ground
13	GND	Ground
14	+12 V	Power supply +12 V
15	+12 V	Power supply +12 V
16	BLANK	LED light disable signal
17	GND	Ground
18	SEQ	Control signal for switch read and LED light
19	RDT	Switch read data
20	GND	Ground
21	TSEQ	Control signal for character display
22	TQCLK	Control signal for character display
23	+12 V	Power supply +12 V
24	+12 V	Power supply +12 V
25	GND	Ground

1-4-3. BKDS-7025/7026



Notes

<CONTROLLER>(*1) : Controlling device

1. Main Panel

SWITCHER : RS-422A (D-sub 9-pin•Female)

<CONTROLLER>(*1) to Processor DVS-7200A

Pin No.	Signal Name	Function
1	FG	Frame ground
2	RX-A	Received data (–)
3	TX-B	Transmitted data (+)
4	GND	Common ground
5	FIELD (+)	Field signal input (+)
6	GND	Common ground
7	RX-B	Received data (+)
8	TX-A	Transmitted data (–)
9	FIELD (–)	Field signal input (–)

DME : RS-422A (D-sub 9-pin•Female)

<CONTROLLER>(*1) to Digital multi effects DME-3000/7000 etc.

Pin No.	Signal Name	Function
1	FG	Frame ground
2	RX-A	Received data (–)
3	TX-B	Transmitted data (+)
4	GND	Common ground
5	–	–
6	GND	Common ground
7	RX-B	Received data (+)
8	TX-A	Transmitted data (–)
9	–	–

REMOTE 1 : RS-422A (D-sub 9-pin•Female)

<CONTROLLER>(*1) to External Device

Pin No.	Signal Name	Function
1	FG	Frame ground
2	RX-A	Received data (–)
3	TX-B	Transmitted data (+)
4	GND	Common ground
5	–	–
6	GND	Common ground
7	RX-B	Received data (+)
8	TX-A	Transmitted data (–)
9	–	–

REMOTE 2 to 5(*2) : RS-422A (D-sub 9-pin•Female)

<CONTROLLER>(*1) to External Device

Pin No.	Signal Name	Function
1	FG	Frame ground
2	RX-A	Received data (–)
3	TX-B	Transmitted data (+)
4	GND	Common ground
5	–	–
6	GND	Common ground
7	RX-B	Received data (+)
8	TX-A	Transmitted data (–)
9	–	–

(*2) : BKDS-7001 (Option : IF-523 board) is in need of using the REMOTE from 1 to 4.

TERMINAL 1, 2 : RS-232C (D-sub 9-pin•Female)
to Terminal

Pin No.	Signal Name	Function
1	DCD	Data carrier detect ^(※3)
2	RXD	Received data
3	TXD	Transmitted data
4	DTR	Data terminal ready ^(※3)
5	GND	Ground
6	DSR	Data set ready ^(※3)
7	RTS	Request to send ^(※4)
8	CTS	Clear to send ^(※4)
9	—	—

(※3) : Pins 1, 4 and 6 are short-circuited each other on the CN-1143 board.

(※4) : Pins 7 and 8 are short-circuited each other on the CN-1143 board.

DISPLAY PANEL : (D-sub 25-pin•Female)
to Display panel

Pin No.	Signal Name	Function
1	GND	Ground
2	+12 V	Power supply +12 V
3	SCLK	Serial clock for switch read and LED light
4	GND	Ground
5	WDT	LED light data
6	IWLD	Control signal for switch read and LED light
7	GND	Ground
8	ELCK	EL display indicate clock
9	EL DATA 0	EL display indicate data
10	GND	Ground
11	ELVD	EL display vertical sync signal
12	GND	Ground
13	GND	Ground
14	+12 V	Power supply +12 V
15	+12 V	Power supply +12 V
16	BLANK	LED light disable signal
17	GND	Ground
18	SEQ	Control signal for switch read and LED light
19	RDT	Switch read data
20	GND	Ground
21	ELHD	EL display horizontal sync signal
22	EL DATA 1	EL display indicate data 1
23	+12 V	Power supply +12 V
24	+12 V	Power supply +12 V
25	GND	Ground

GPI : (D-sub 25-pin•Female)

INPUT × 8, TTL

OUTPUT × 4, relay contact 30 V 0.1 A
(resistance load)

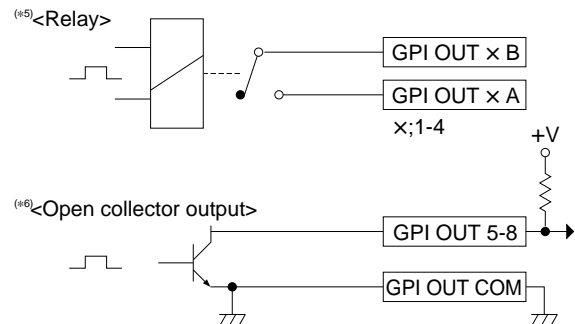
OUTPUT × 4, open collector 30 V rated voltage

GPI timing : Refer to User's Guide

Pin No.	Signal Name	Function
1	GND	Ground
2	GND	Ground
3	GPI IN 2	General-purpose input
4	GPI IN 4	
5	GPI IN 6	
6	GPI IN 8	
7	GPI OUT 1B	General-purpose relay output (B) ^(※5)
8	GPI OUT 2B	
9	GPI OUT 3B	
10	GPI OUT 4B	
11	GPI OUT 6	General-purpose open collector output ^(※6)
12	GPI OUT 8	
13	GND	Ground
14	GND	Ground
15	GPI IN 1	General-purpose input
16	GPI IN 3	
17	GPI IN 5	
18	GPI IN 7	
19	GPI OUT 1A	General-purpose relay output (A) ^(※5)
20	GPI OUT 2A	
21	GPI OUT 3A	
22	GPI OUT 4A	
23	GPI OUT 5	General-purpose open collector output ^(※6)
24	GPI OUT 7	
25	GND	Ground

Note

A and B of same number constitute a pair of relay contacts.



OPTION PANEL : (D-sub 25-pin•Female)
to Adaptor box (BKDS-7075)

Pin No.	Signal Name	Function
1	GND	Ground
2	+12 V	Power supply +12 V
3	SCLK	Serial clock for switch read and LED light
4	GND	Ground
5	WDT	LED light data
6	IWLD	Control signal for switch read and LED light
7	GND	Ground
8	TCLK	Serial clock for character display
9	TWDT	Indicate data for character display
10	GND	Ground
11	TBLANK	Disable signal for character display
12	GND	Ground
13	GND	Ground
14	+12 V	Power supply +12 V
15	+12 V	Power supply +12 V
16	BLANK	LED light disable signal
17	GND	Ground
18	SEQ	Control signal for switch read and LED light
19	RDT	Switch read data
20	GND	Ground
21	TSEQ	Control signal for character display
22	TQCLK	Control signal for character display
23	+12 V	Power supply +12 V
24	+12 V	Power supply +12 V
25	GND	Ground

Note

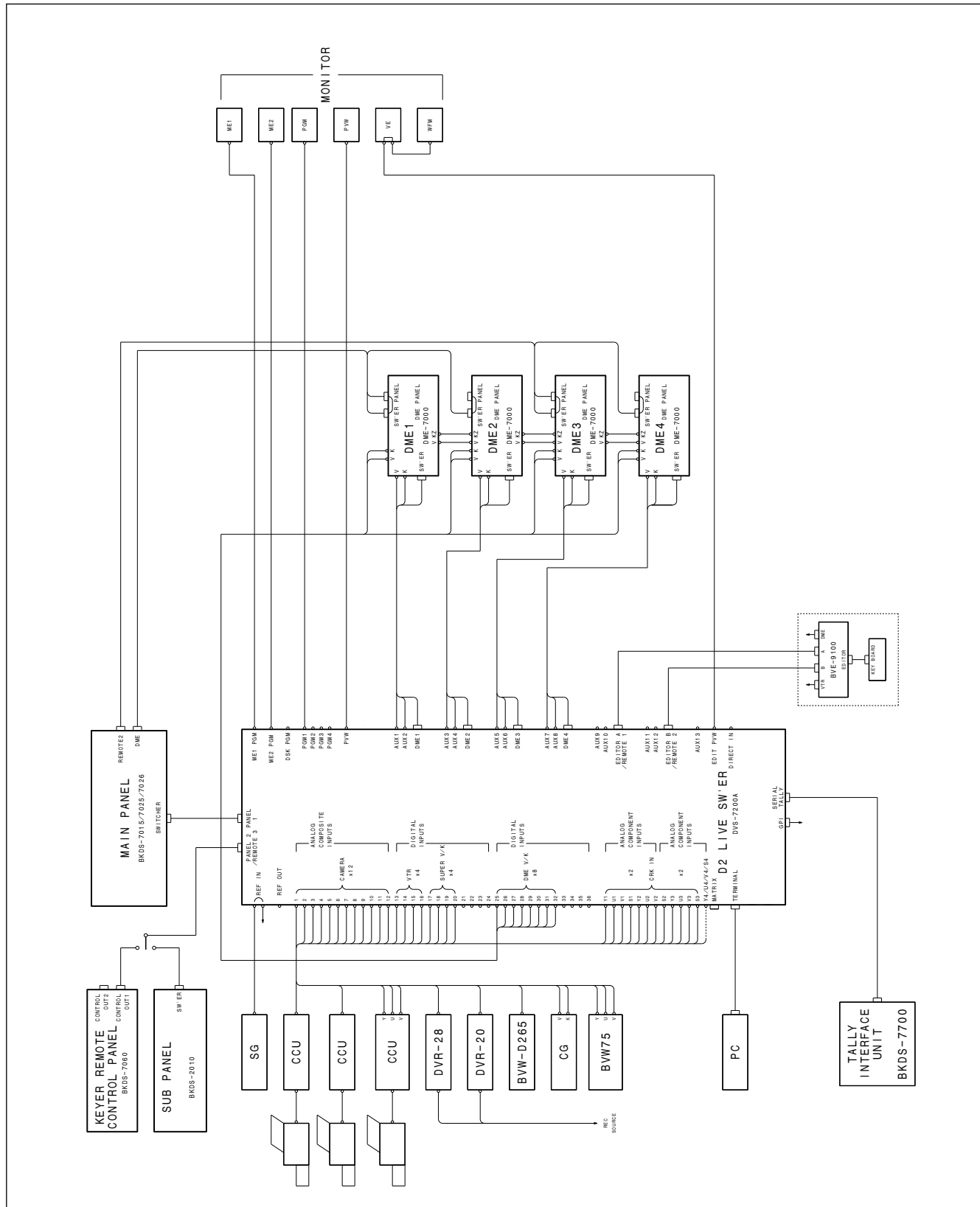
This port is used for special-use-ready. Only when connecting the control harness onto the CN8 of the connector on the CN-1143 board, this port is enable.

2. Display Panel

— : (D-sub 25-pin•Female)
from Main panel

Pin No.	Signal Name	Function
1	GND	Ground
2	+12 V	Power supply +12 V
3	SCLK	Serial colck for switch read and LED light
4	GND	Ground
5	WDT	LED light data
6	IWLD	Control signal for switch read and LED light
7	GND	Ground
8	ELCK	LE display indicate clock
9	EL DATA 0	EL display indicate data 0
10	GND	Ground
11	ELVD	EL display vertical sync signal
12	GND	Ground
13	GND	Ground
14	+12 V	Power supply +12 V
15	+12 V	Power supply +12 V
16	BLANK	LED light disable signal
17	GND	Ground
18	SEQ	Control signal for switch read and LED light
19	RDT	Switch read data
20	GND	Ground
21	ELHD	EL display horizontal sync signal
22	EL DATA 1	EL display indicate data 1
23	+12 V	Power supply +12 V
24	+12 V	Power supply +12 V
25	GND	Ground

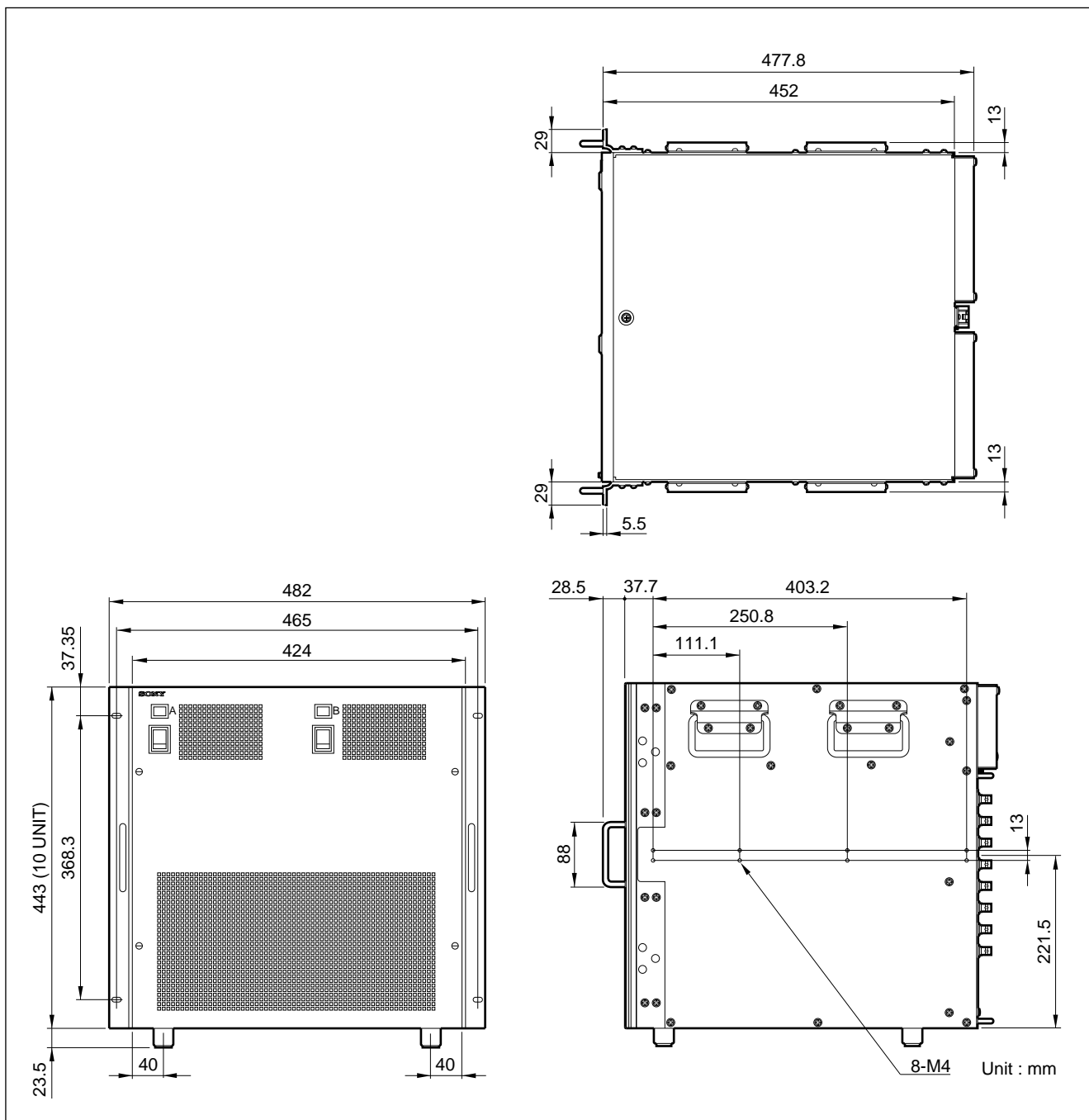
2. D2 LIVE SWITCHER SYSTEM



Section 2

Installation of DVS-7200A

2-1. External Dimensions



2-2. Rack Mounting

It is possible to be mounted DVS-7200A in a 19-inch standard rack. Be sure to use the optional rack mount rail RMM-18DV.

Required Parts

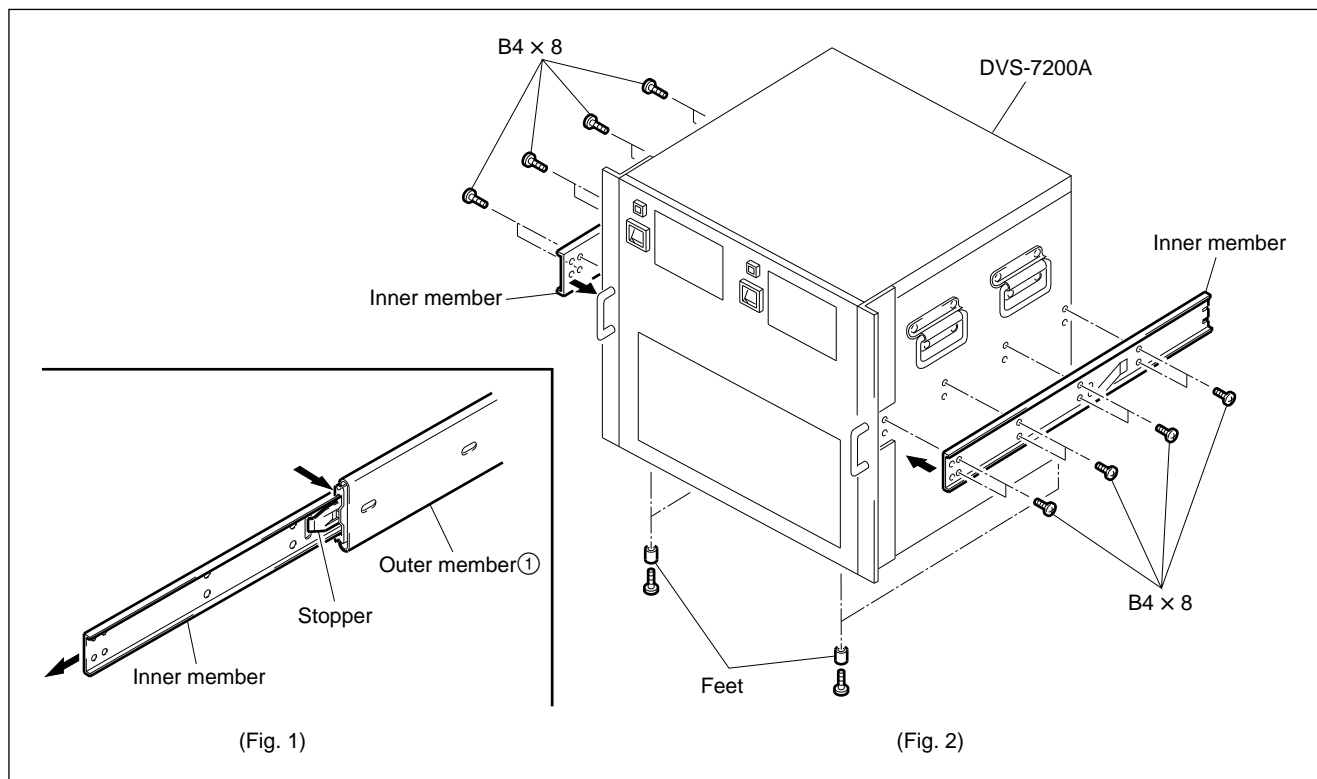
- Rack mount rail (RMM-18DV)
- Screw for plate nut (long) installing (B4 × 8) : 8 pcs
- Screw for rack mounting (RK5 × 16) : 4 pcs
- Ornamental washer for rack mounting : 4 pcs
(Sony part number : 2-297-913-01)

CAUTION

- (1) If DVS-7200A is mounted in the 19-inch standard rack, it is recommended to install a ventilation fan to prevent a temperature rise in the rack. Make sure that all the units in the rack should be operated within the temperature range of 10 °C to 35 °C.
- (2) Be sure to use the recommended rail when rack mounting. The unit cannot be installed completely to a rack by rack angles alone.
- (3) It is recommended to fix the rack to the floor with bolts. When the unit is pulled out from the rack, this will prevent its fall.
- (4) An installation manual is supplied with the rack mount rail RMM-18DV. However follow the instructions in this manual. Because the rack mounting procedures of DVS-7200A differ somewhat from the procedures explained in RMM-18DV installation manual.
- (5) Be sure to mount in the rack with two-person or more.

Procedures

- (1) Pull out the inner member while pressing the stopper of the rack mount rail RMM-18DV. (Fig. 1)

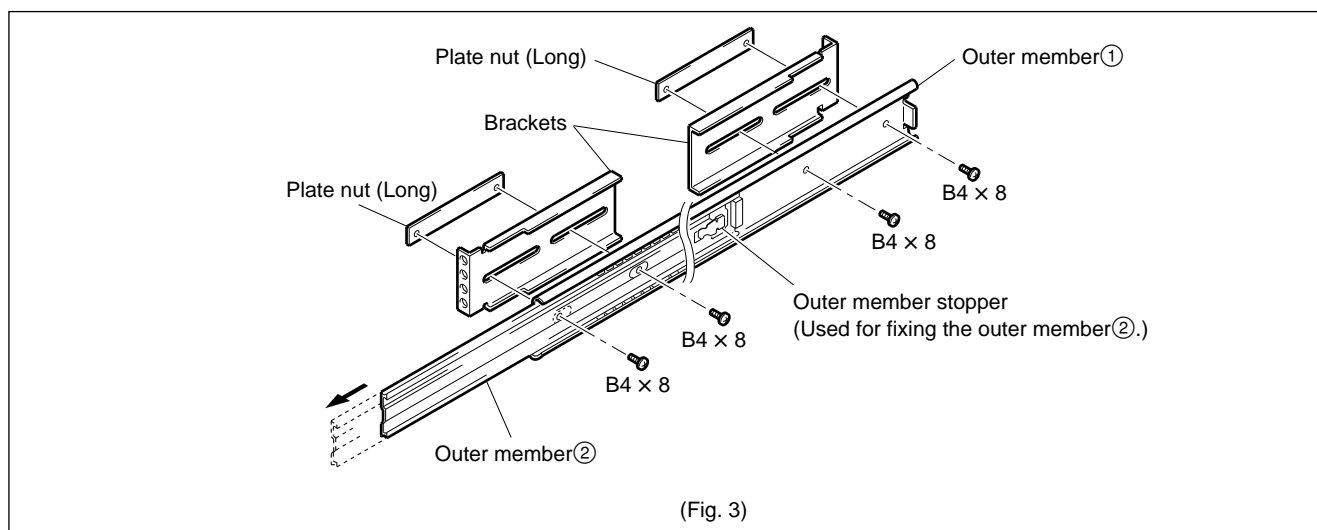


- (2) Secure the inner member to the unit by the sixteen screws (B4 × 8) supplied with DVS-7200A.

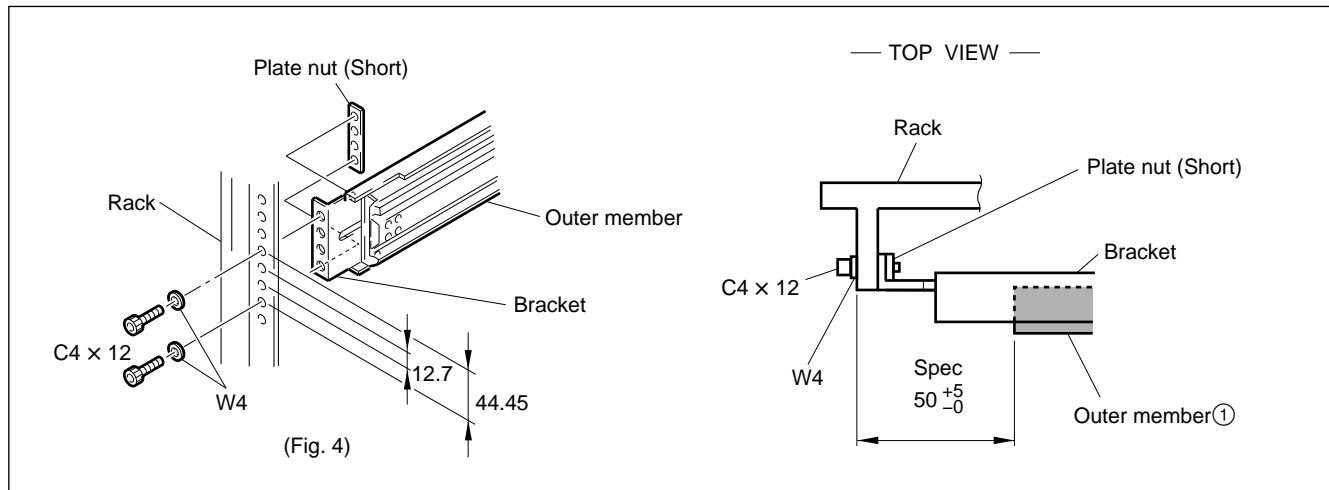
Remove the feet of the unit as required. (Fig. 2)

- (3) Secure the bracket to the outer member ① by the prepared eight screws (B4 × 8). (Fig. 3)

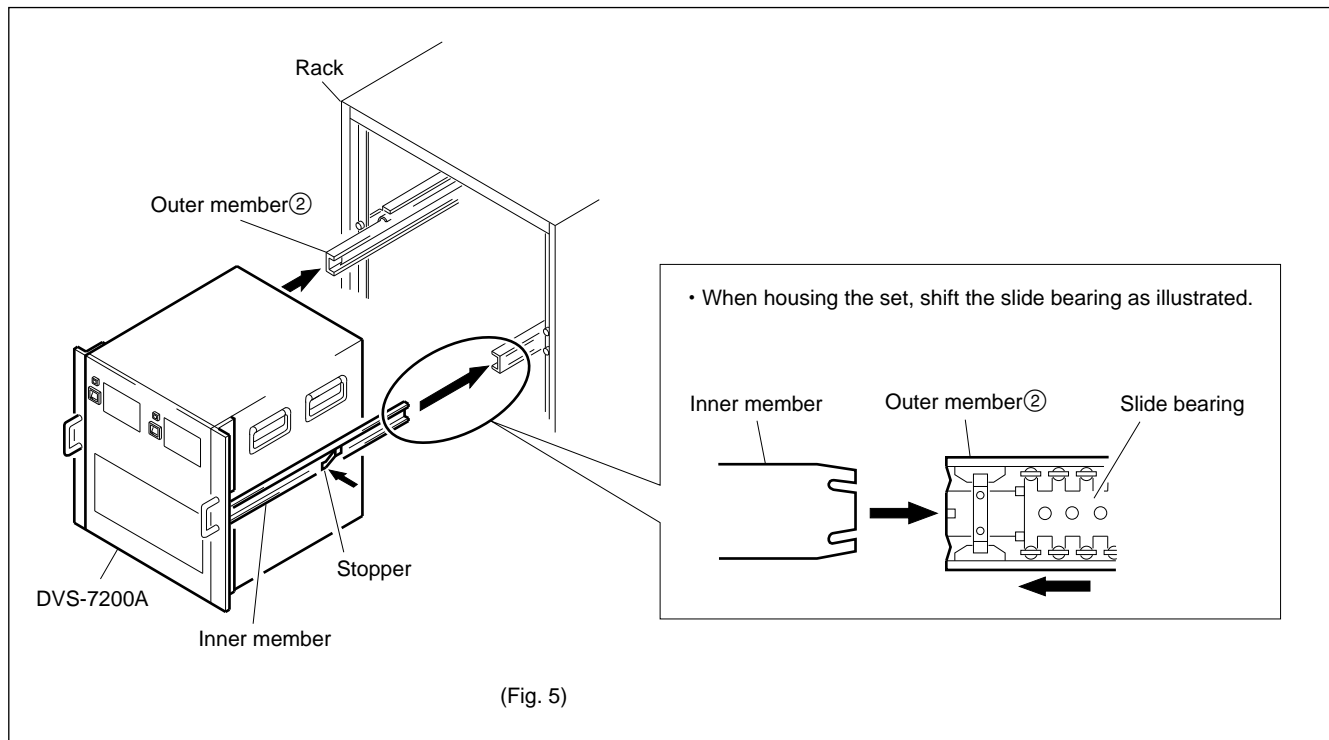
To see the screw hole of the outer member ①, move the outer member ① back-and-forth.



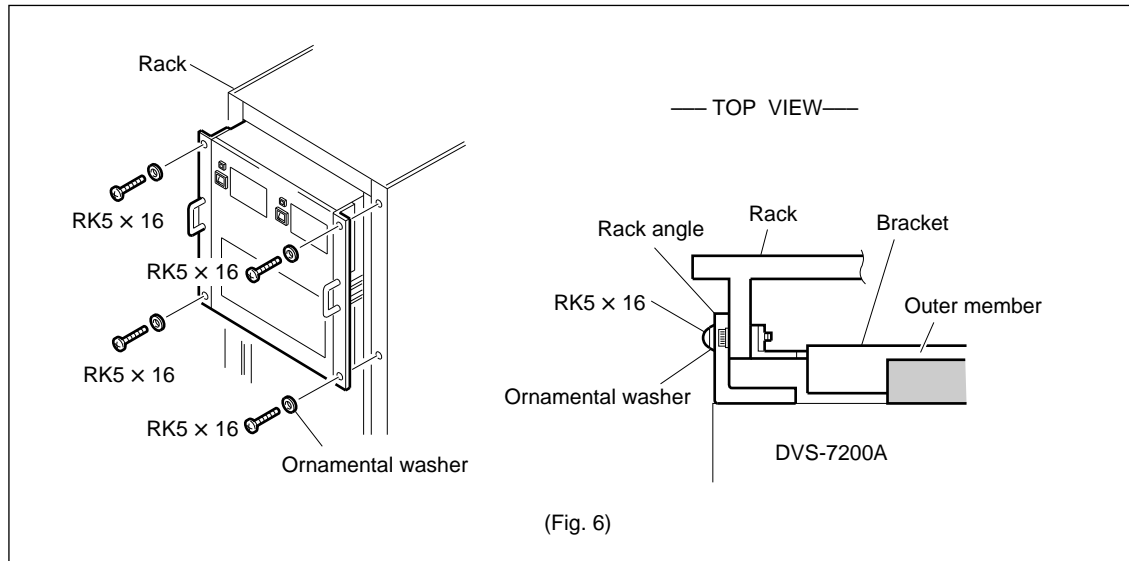
- (4) Temporarily secure the bracket to the outer member assembly ① to both sides of the rack by the eight screws (C4 × 12) and the eight washers (W4) supplied with RMM-18DV. Adjust the installation position of the outer member to meet the specification shown in the figure. After the adjustment, tighten the screws (B4 × 8) temporarily secured in the step (3). (Fig. 4)



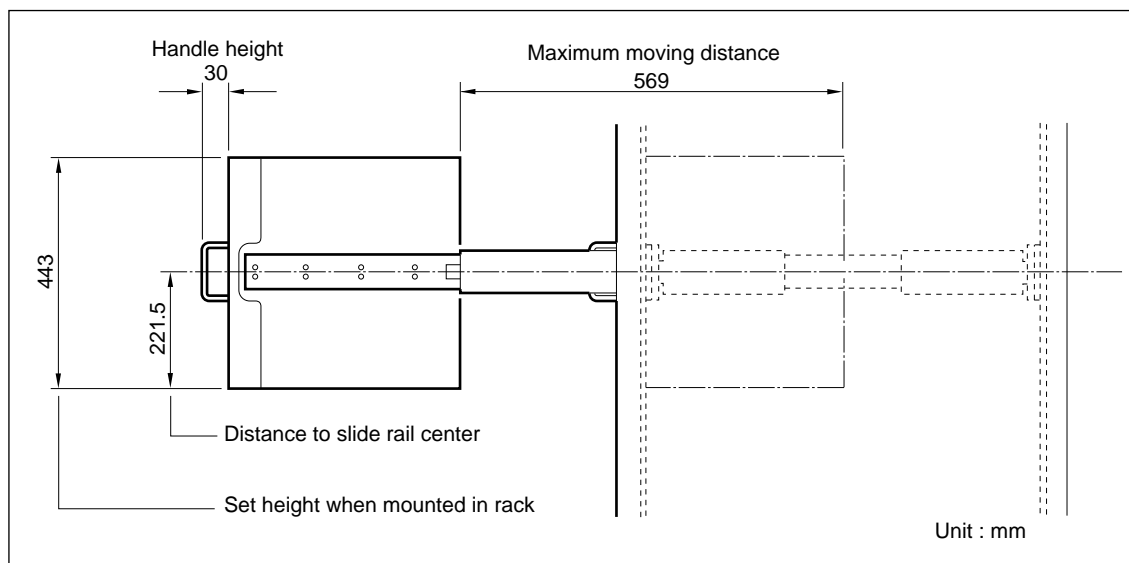
- (5) Install the unit in the rack while releasing the stopper of the inner member.
- (6) After confirming that the unit can be moved smoothly, tighten the screws (C4 × 12) temporarily secured in the step (4). (Fig. 5)



- (7) After installing the unit in the rack, secure the unit to the rack by the prepared four screws (RK5 × 16) and the four ornamental washers. (Fig. 6)



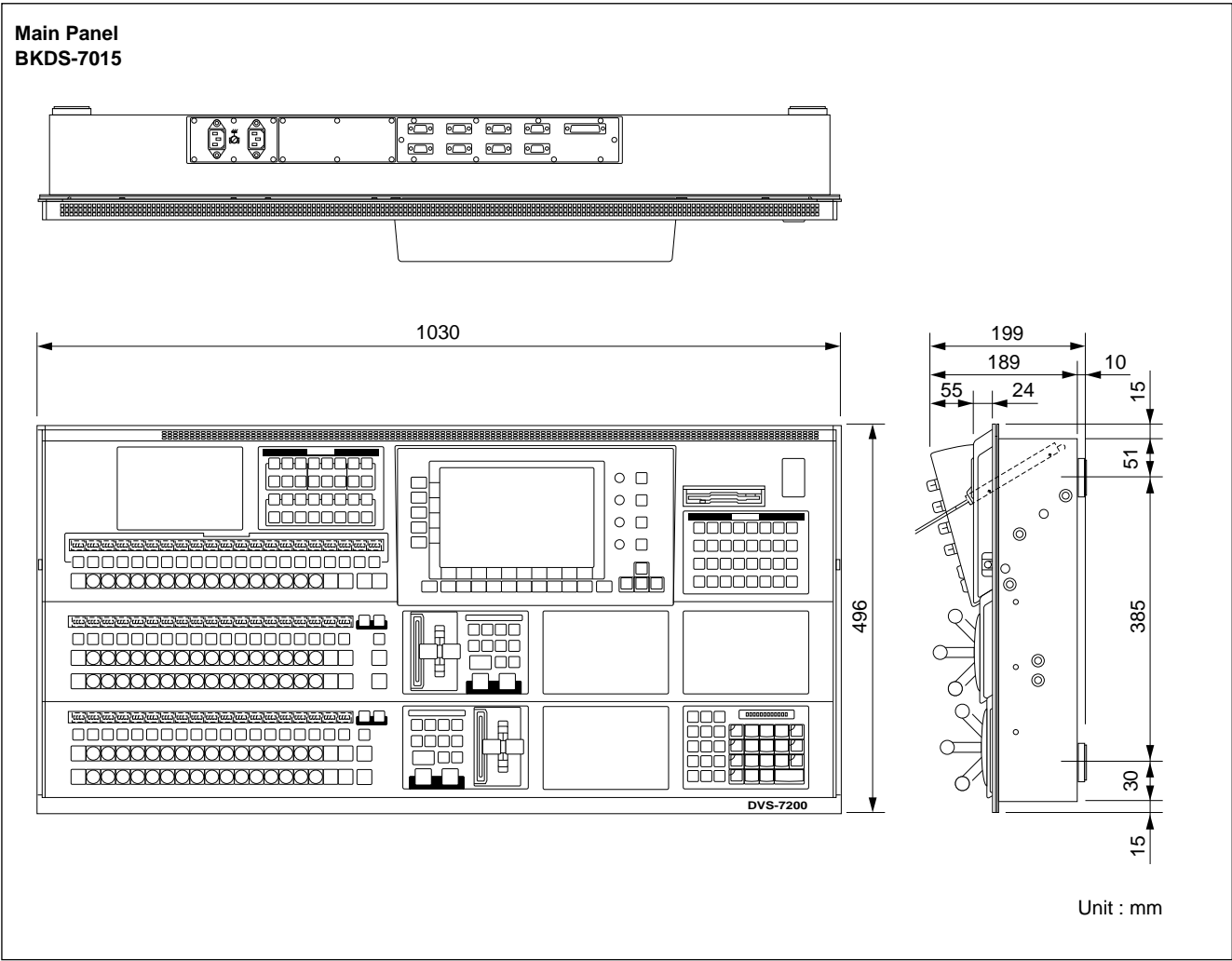
- When DVS-7200A is mounted in a rack, the maximum traveling distance is illustrated below.

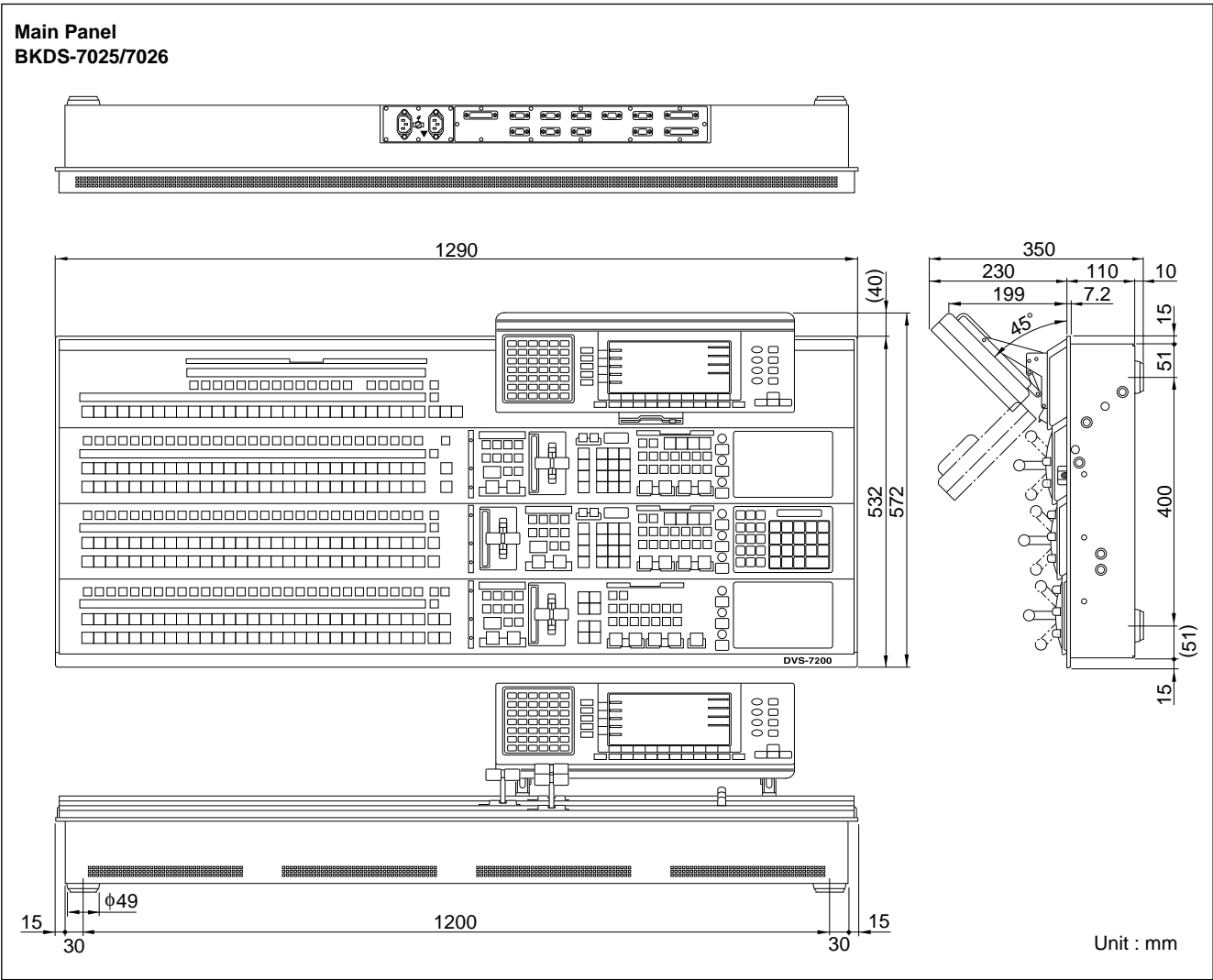


Section 3

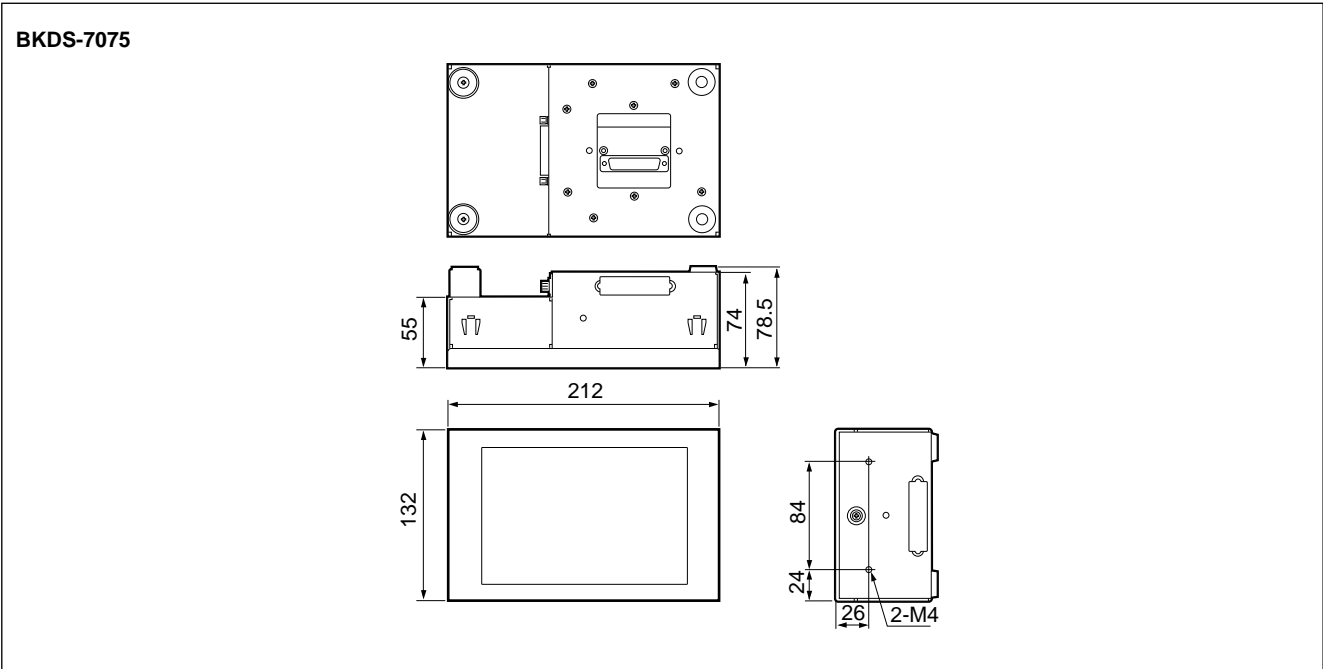
Installation of Control Panel

3-1. External Dimensions





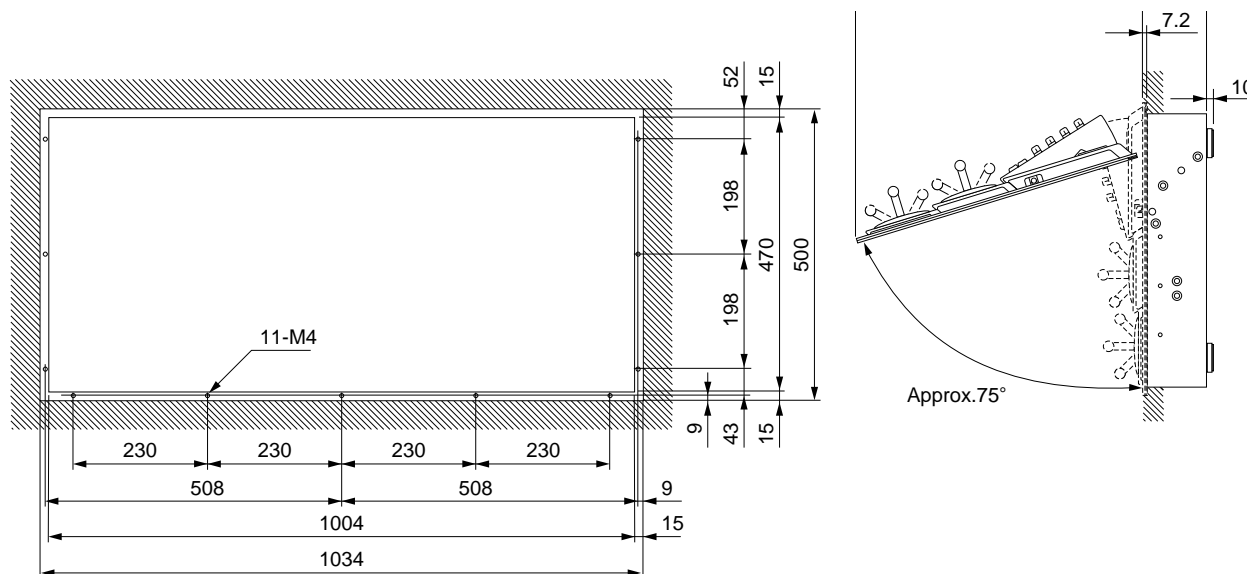
* The above figure shows the BKDS-7025.



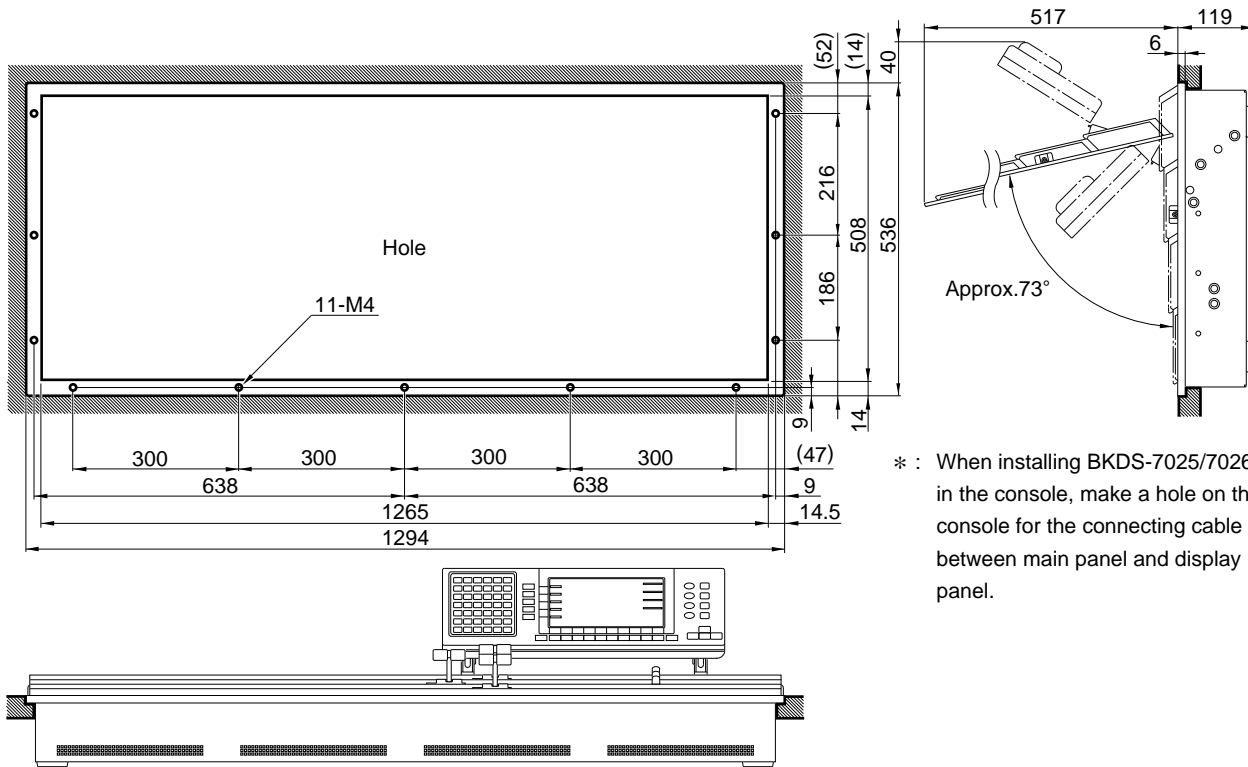
3-2. Installation Space

Control panel can be installed in the console by drilling holes in the console in the locations specified below.

BKDS-7015



BKDS-7025/7026



3-3. Installation of MAIN PANEL

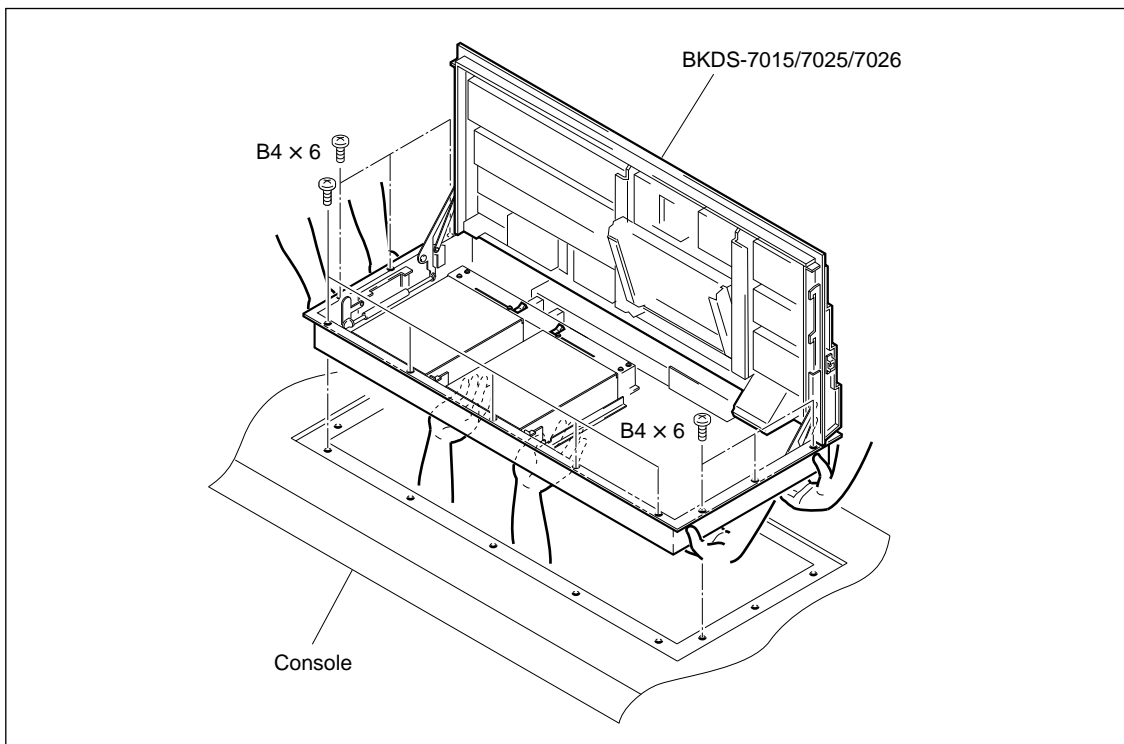
CAUTION

- (1) Be sure to install the main panel to the rack with three-person or more.
- (2) Be sure to install the panel in the following procedures.

Prepared Part

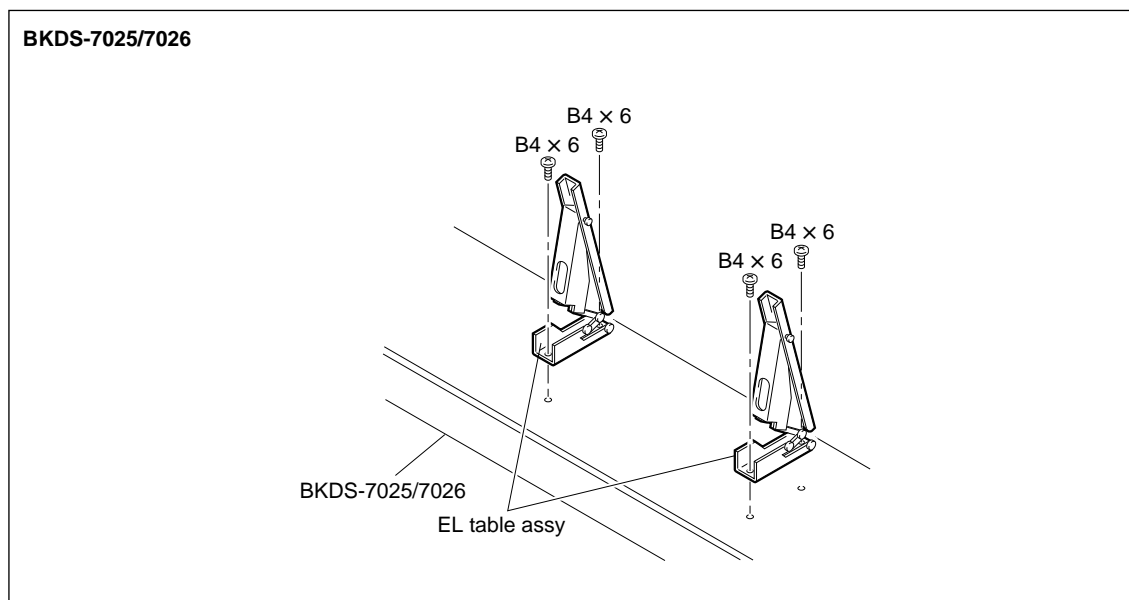
Screws (B4 × 6) : 11 pcs

- (1) Lift the main panel with two-person or more. Then install the main panel to console while supporting under the main panel with the other one person.
- (2) Open the main panel. (Refer to “4-4-1. Opening and Closing of Panel”.)
- (3) Secure the main panel to the console by the prepared screws (B4 × 6).

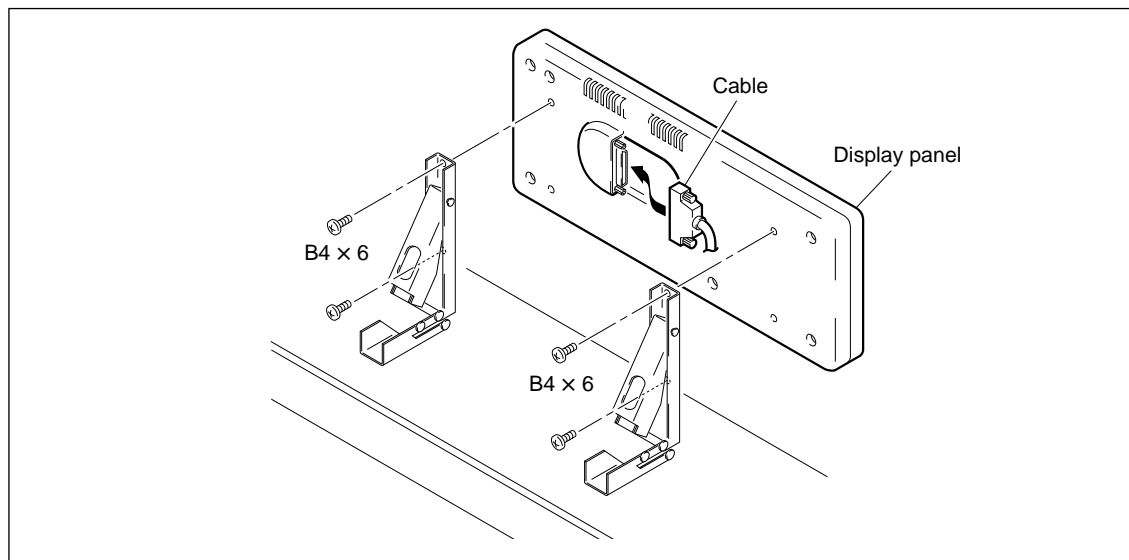


3-4. Installation of DISPLAY PANEL (BKDS-7025/7026)

- (1) Secure the EL table assembly to BKDS-7025 and 7026 by the four screws (B4 × 6) supplied with BKDS-7025 and 7026.



- (2) Secure the DISPLAY PANEL to the EL unit assembly by the four screws (B4 × 6) supplied with BKDS-7025 and 7026.



3-5. Replacement of Key Tops

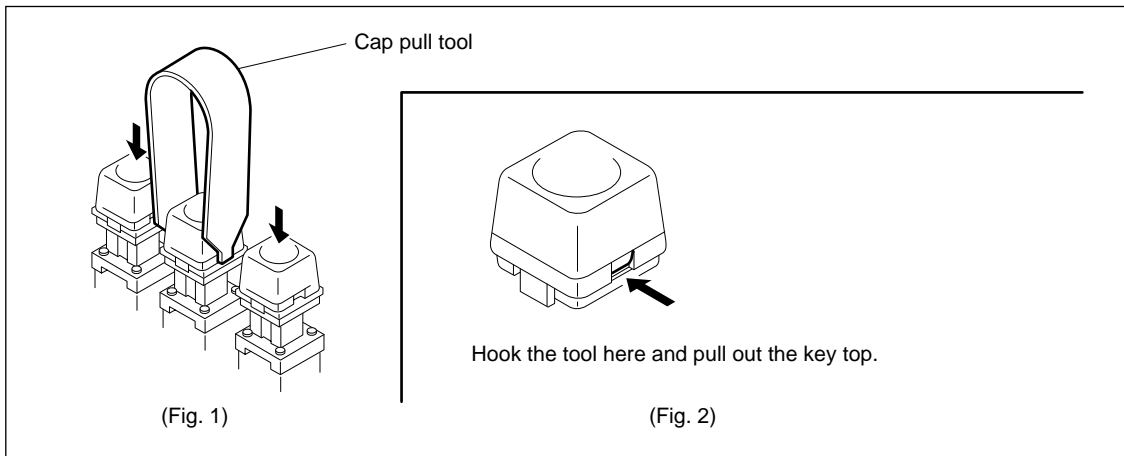
The control panels are supplied with a cap pull tool.

Remove or install the key top in the following procedures.

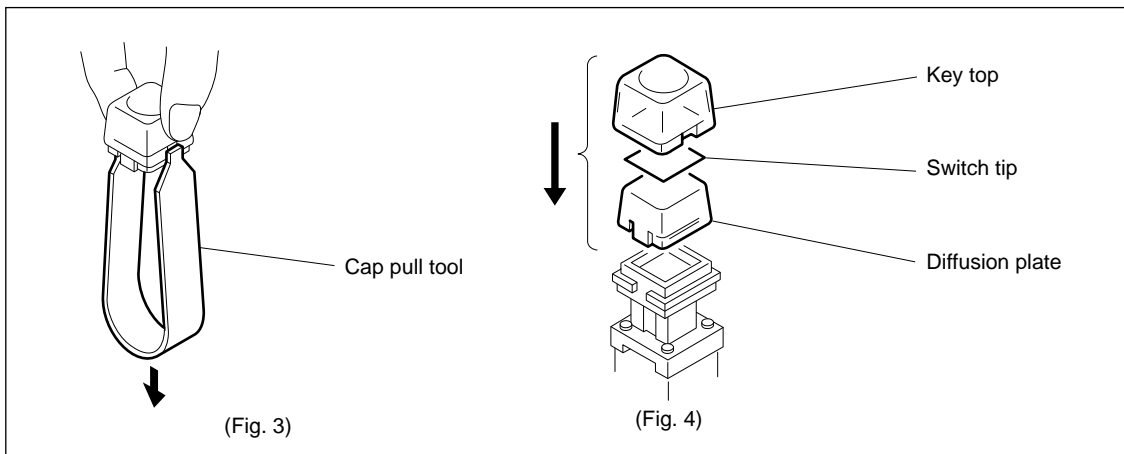
For removing the key tops, use the cap pull tool.

Part number : 3-179-054-01

- (1) Push down the key top on both sides and insert the cap pull tool in the gap between key and sides.
(Fig. 1)
- (2) Hold the key top to remove it. (Fig. 2)



- (3) Remove the diffusion plate (milky white color) by the cap pull tool from the removed key top.
- (4) Insert the switch tip between diffusion plate (milky white color) and key top (clear), and assemble them by pushing in the key.



Section 4

Installation of Options

Optional Equipments for DVS-7200A

Option	Function name
BKDS-7103 (DI-36 board)	12Input Serial Digital Board
BKDS-7110 (ADC-21 board)	Blank Input Adaptor Board
BKDS-7111 (ADI-3 board)	Analog Composite Input Board
BKDS-7113 (DI-34 board)	Serial Digital Input Board
BKDS-7133 (ADC-22 and ENC-34 boards)	CRK Analog Component Input Board
BKDS-7161 (DA-94 board)	Analog Composite Output Board
BKDS-7163 (SD-48 board)	Serial Digital Output Board
BKDS-7250 (MIX-35 board)	P/P DSK Board
BKDS-7270 (BD-26 board)	Key Border Board
BKDS-7271 (BD-35 board)	Fine Key/Key Border Board
BKDS-7280 (UP-10 board)	ME PVW Board
BKDS-7340 (MIX-35 board)	DSK Board/Control Panel Unit
BKDS-7420 (CC-81 board)	Color Correction Board
BKDS-7445 (YC-59 board)	Frame Memory Adaptor Board
BKDS-7690 (LE-55, RE-109 and RE-110 boards)	Redundant Power Supply Unit
BKDS-2031 (CRK-10 board)	Chromakey Board
BKDS-2032 (CRK-11 board)	Chromakey Upgrade Board
BKDS-2041 (MY-66 board)	Frame Memory Board
BKDS-2070 (WKG-12 board)	Enhanced Wipe Generator Board
BZS-7040A ^(※1)	Operation Software with Manual (E)
BZS-7060A ^(※2)	Operation Software with Manual (E)

Optional Equipments for the control panels

Option	Function name
BKDS-7001 (IF-523 board)	Control Port Expansion Board
BKDS-7002 (LE-147, 148, 180 and DC-92 boards)	Source Name Display Unit ^(※3)
BKDS-7030 (KY-328 and LE-144 boards)	Key Frame Control Panel Unit
BKDS-7031 (KY-329 board)	DME Control Panel Unit
BKDS-7033 (KY-395C board)	Memory Recall Control Panel Unit
BKDS-7075 (IF-629 board)	Control Panel Remote Adaptor
BKDS-7090 (RE-112 board)	Redundant Power Supply Unit
BKDS-7091 (RE-146 board)	Redundant Power Supply Unit
BKDS-7340 (KY-393 and LE-142 boards)	DSK Board/Control Panel Unit ^(※3)

(※1) : For installation of BZS-7040A, refer to the section 6 and BZS-7040A User's Guide.

(※2) : For installation of BZS-7060A, refer to the section 6 and BZS-7060A User's Guide.

(※3) : Those boards can be installed only on the BKDS-7015.

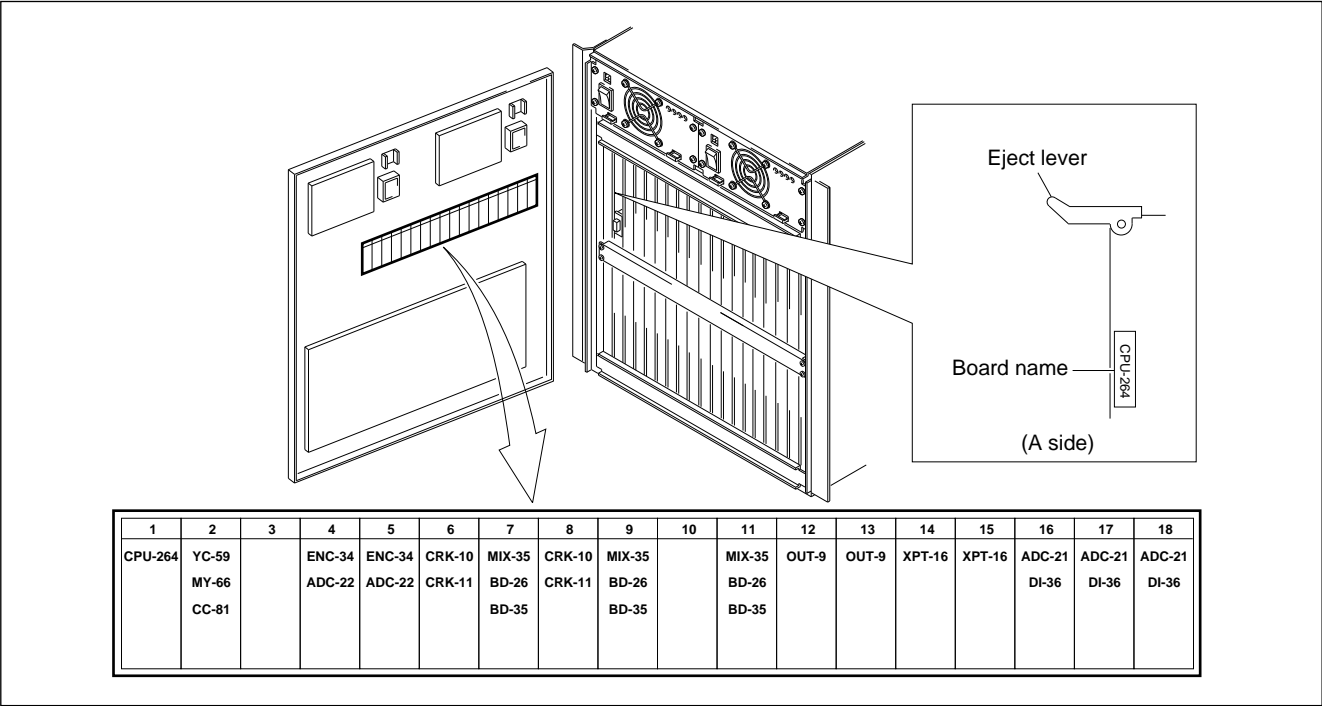
4-1. Installation of Plug-in Boards

It is possible to be used DVS-7200A for various systems, and its functions can be extended by selecting the optional boards. Each plug-in board must be installed in the corresponding slot of DVS-7200A.

Confirm that all the boards are in the specified slots by referring to the following table.

For the details of how to install the plug-in board, refer to “4-3-2. Inserting/Pulling Out of Plug-in Boards”.

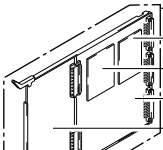
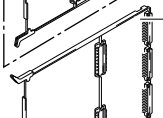
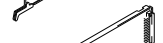
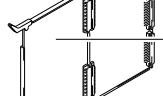
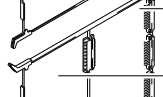
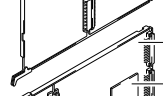
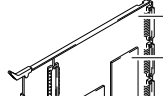



The board name are displayed near the eject lever at the left side on the A side of each plug-in board. The slot numbers that can be installed the board are displayed on the inside of the front panel of DVS-7200A. Like the standard board, each optional boards should also be installed in the specified slot according to the slot number display.



Note

- (1) Confirm that the connectors on each board are securely connected to the MB-618 board of the main unit.
- (2) If the board is installed in an incorrect slot, a system error occurs. Then the system is not properly activated.
- (3) Be sure to confirm the power supply voltage when an optional board is added or a board is replaced. (Refer to “5-2. Adjustment of Secondary Power Supply Voltage”.)

Plug-in Boards

Slot No.	Option Board	Standard Board	Function Name
1		① CPU-264B board	① System control board
		② IF-758 board	② Interface board
		③ MEM-94 board	③ Memory board
		④ CA-35B board	④ Application board
		⑤ CPU-264 board	⑤ System control board
2		⑥ CC-81 board or ⑦ YC-59 board	⑥ BKDS-7420 Color correction board or ⑦ BKDS-7445 Frame memory adaptor board
		⑧ MY-66 board	⑧ BKDS-2041 Frame memory board
3 (Spare)		⑨ ENC-34 board	⑨ BKDS-7133 Encoder board
4 and 5		⑩ ADC-22 board	⑩ BKDS-7133 CRK analog component input board
		⑪ CRK-10 board	⑪ BKDS-2031 Chroma key board
6, 8 and 10		⑫ CRK-11 board	⑫ BKDS-2032 Chroma key upgrade board
		⑬ MIX-35 board	⑬ Video mixer board
		⑭ UP-10 board	⑭ BKDS-7280 ME PVW board
7 and 9		⑮ WKG-12 board	⑮ BKDS-2070 Enhanced wipe generator board
		⑯ BD-26 board or ⑰ BD-35 board	⑯ BKDS-7270 Key border board or ⑰ BKDS-7271 Fine key/key border board
		⑱ OUT-9 board	⑱ Output processor board
11		⑲ OUT-9 board	⑲ BKDS-7161 Analog composite output board or ⑲ BKDS-7163 Serial digital output board
		⑳ DA-94 board or ㉑ SD-48 board	⑳ BKDS-7103 12 input serial digital board
		㉒ XPT-16 board	㉒ Cross point board
12 and 13		㉓ DI-36 board	㉓ BKDS-7110 Blank input adaptor board
14 and 15		㉔ ADC-21 board	㉔ BKDS-7111 Analog composite input board or ㉔ BKDS-7113 Serial digital input board
16, 17 and 18		㉕ ADI-3 board or ㉖ DI-34 board	

4-2. Combination of Optional boards

4-2-1. Function of Optional Boards

1. Input

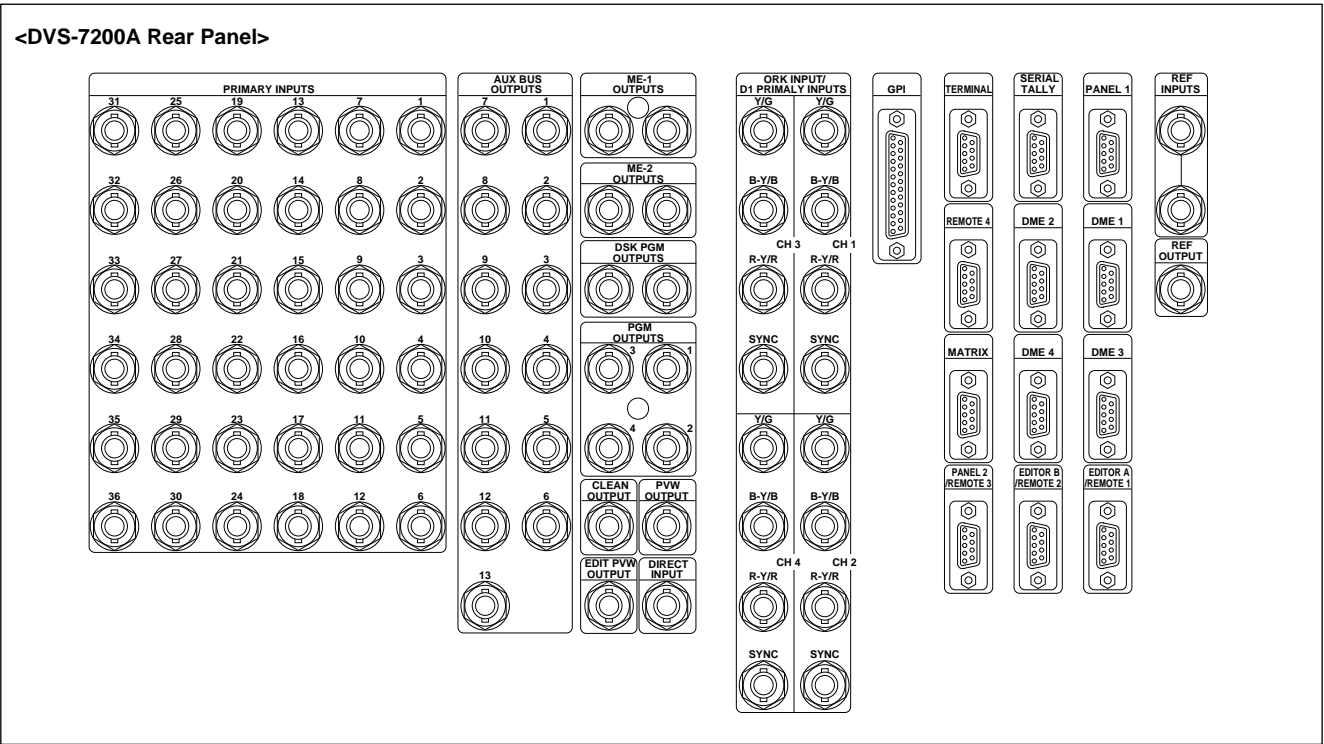
- The primary inputs, 1 through 12, on the rear panel can be used if installing DI-36 board (BKDS-7103) into Slot 16. Similarly, inputs 13-24 with DI-36 board installed in Slot 17, and inputs 25-36 with DI-36 board installed in Slot 18.
- The analog composite (NTSC) input can be used if installing ADI-3 board (BKDS-7111) onto ADC-21 board (BKDS-7110).
- The serial digital input can be used if installing DI-34 board (BKDS-7113) onto ADC-21 board (BKDS-7110).
- The names for the ADI-3 and DI-34 boards printed on the ADC-21 board mean the name of the input connector for DVS-7200A.

2. Output

- The analog composite output can be used if installing DA-94 board (BKDS-7161) onto the OUT-9 board.
- The serial digital input can be used if installing SD-48 board (BKDS-7163) onto OUT-9 board.
- The names for the DA-94 and SD-48 boards printed on the OUT-9 board mean the name of the output connector for DVS-7200A.

4-2-2. Relation between Optional Boards and Rear Panel Connectors

Install the applicable optional boards to the specified slots according to the signal to be input and output. The following table shows the relations between rear panel connectors, signals to be input and output, boards and slot numbers.



Output

Slot No.	Optional Output Board	Parent Board OUT-9	Rear Panel Connector
12	DA-94 ^(※1) (BKDS-7161) or	CN1, 2	AUX BUS OUTPUT 1
		CN3, 4	AUX BUS OUTPUT 2
		CN5, 6	AUX BUS OUTPUT 3
	SD-48 ^(※2) (BKDS-7163)	CN7, 8	AUX BUS OUTPUT 4
		CN9, 10	AUX BUS OUTPUT 5
		CN11, 12	AUX BUS OUTPUT 6
		CN13, 14	EDIT PVW OUTPUT
		CN15, 16	PGM OUTPUT
		CN17, 18	PVW OUTPUT
		CN19, 20	CLEAN OUPUT
13	DA-94 ^(※1) (BKDS-7161) or	CN1, 2	AUX BUS OUTPUT 7
		CN3, 4	AUX BUS OUTPUT 8
		CN5, 6	AUX BUS OUTPUT 9
	SD-48 ^(※2) (BKDS-7163)	CN7, 8	AUX BUS OUTPUT 10
		CN9, 10	AUX BUS OUTPUT 11
		CN11, 12	AUX BUS OUTPUT 12
		CN13, 14	AUX BUS OUTPUT 13
		CN15, 16	DSK PGM OUTPUT
		CN17, 18	ME-2 OUTPUT
		CN19, 20	ME-1 OUPUT

(*1) : For analog composite output signal

(*2) : For serial digital output signal

Input : When using BKDS-7110 (ADC-21 board)

Slot No.	Optional Input Board	Parent Board ADC-21	Rear Panel Connector
16	ADI-3 ^(※3) (BKDS-7111) or	CN101, 102	PRIMARY INPUT 1
		CN201, 202	PRIMARY INPUT 2
		CN301, 302	PRIMARY INPUT 3
	DI-34 ^(※4) (BKDS-7113)	CN401, 402	PRIMARY INPUT 4
		CN501, 502	PRIMARY INPUT 5
		CN601, 602	PRIMARY INPUT 6
		CN701, 702	PRIMARY INPUT 7
		CN801, 802	PRIMARY INPUT 8
		CN901, 902	PRIMARY INPUT 9
		CN1001, 1002	PRIMARY INPUT 10
		CN1101, 1102	PRIMARY INPUT 11
		CN1201, 1202	PRIMARY INPUT 12
17	ADI-3 ^(※3) (BKDS-7111) or	CN101, 102	PRIMARY INPUT 13
		CN201, 202	PRIMARY INPUT 14
		CN301, 302	PRIMARY INPUT 15
	DI-34 ^(※4) (BKDS-7113)	CN401, 402	PRIMARY INPUT 16
		CN501, 502	PRIMARY INPUT 17
		CN601, 602	PRIMARY INPUT 18
		CN701, 702	PRIMARY INPUT 19
		CN801, 802	PRIMARY INPUT 20
		CN901, 902	PRIMARY INPUT 21
		CN1001, 1002	PRIMARY INPUT 22
		CN1101, 1102	PRIMARY INPUT 23
		CN1201, 1202	PRIMARY INPUT 24
18	ADI-3 ^(※3) (BKDS-7111) or	CN101, 102	PRIMARY INPUT 25
		CN201, 202	PRIMARY INPUT 25
		CN301, 302	PRIMARY INPUT 27
	DI-34 ^(※4) (BKDS-7113)	CN401, 402	PRIMARY INPUT 28
		CN501, 502	PRIMARY INPUT 29
		CN601, 602	PRIMARY INPUT 30
		CN701, 702	PRIMARY INPUT 31
		CN801, 802	PRIMARY INPUT 32
		CN901, 902	PRIMARY INPUT 33
		CN1001, 1002	PRIMARY INPUT 34
		CN1101, 1102	PRIMARY INPUT 35
		CN1201, 1202	PRIMARY INPUT 36

(*3) : For analog composite input signal

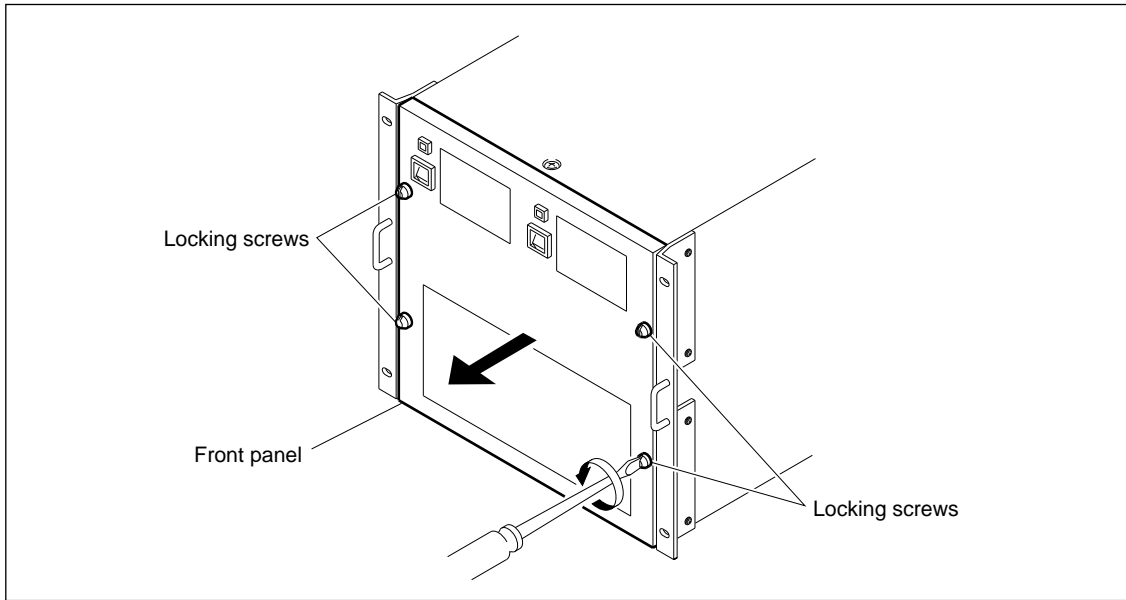
(*4) : For serial digital input signal

4-3. Installation of Options for DVS-7200A

This section is described the installation procedures of the optional equipments that are installed to DVS-7200A.

4-3-1. Removing and Installing of Front Panel

- (1) Loosen the four locking screws on the front panel using a flatblade screwdriver.
- (2) Remove the front panel in the direction of the arrow.
- (3) Install the front panel in the reverse order of the steps (1) and (2).

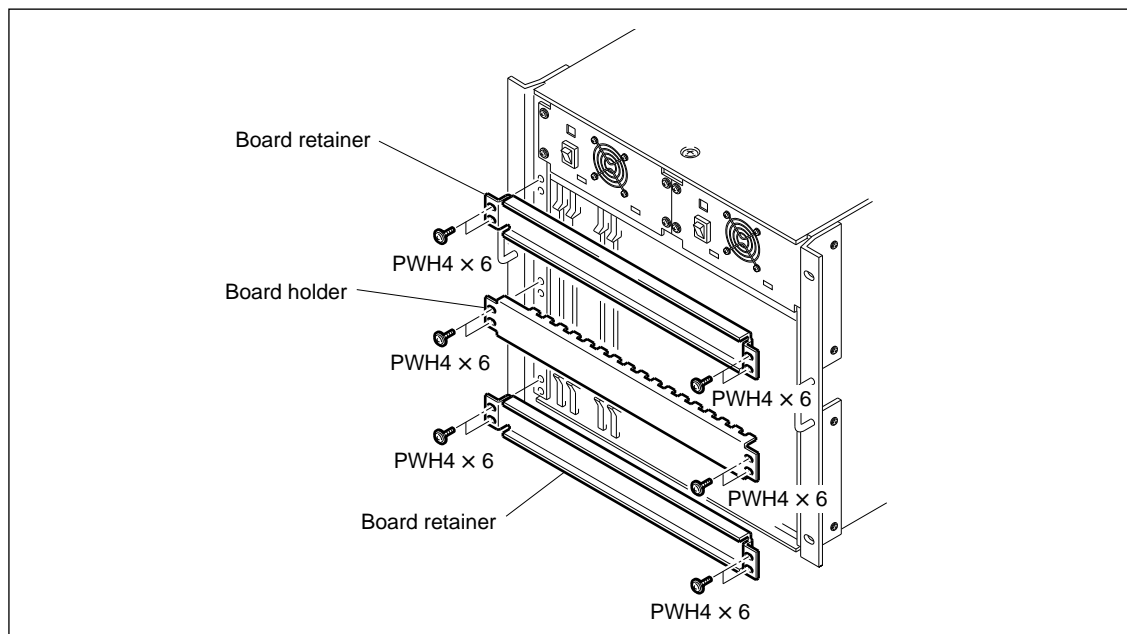


4-3-2. Inserting/Pulling Out of Plug-in Boards

CAUTION

To avoid shock hazards and/or damage to the boards, be sure to turn off the power switch before inserting or pulling out the plug-in boards.

- (1) Remove the front panel. (Refer to “4-3-1. Removing and Installing of Front Panel”.)
- (2) Remove the twelve screws, the two board retainer and the one board holder.



Removal

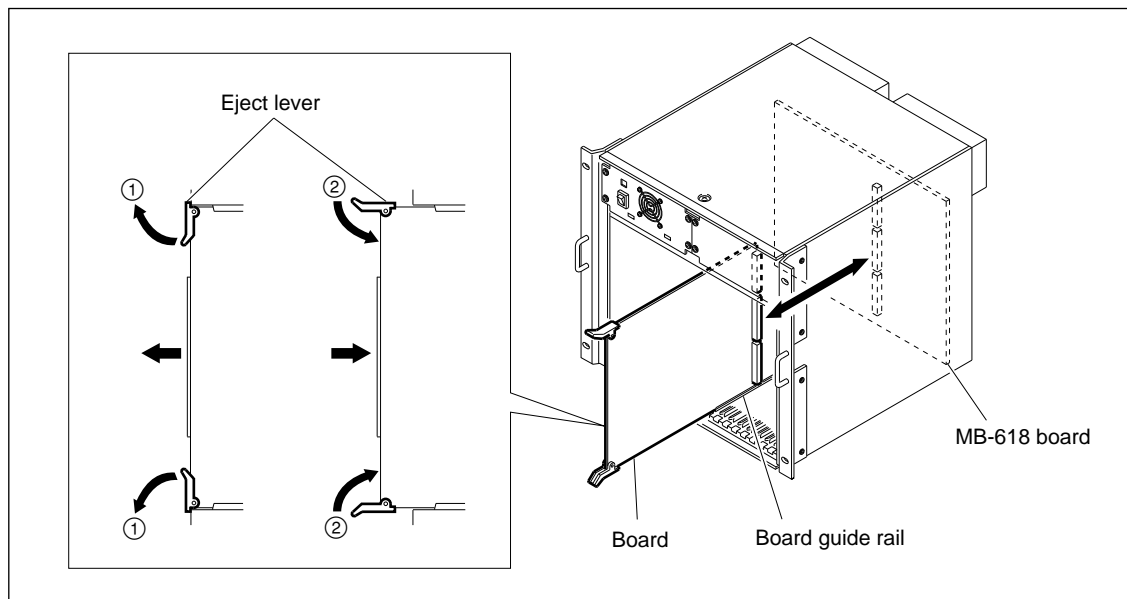
- (3) Open the eject levers of the plug-in board in the direction of the arrows ①.
- (4) Pull out the plug-in board from the unit.

Note

Pull out the plug-in board with a equal force for both eject levers.

Installation

- (5) Insert the plug-in board along the board guide rails while putting the eject levers to the direction of the arrows ① as shown in the figure.
- (6) Connect the plug-in board to the connector on the mother board by putting the eject levers in the direction of the arrows ②.
- (7) Install the two board retainer and the one board holder in the reverse order of the steps (1) and (2).



4-3-3. Installation of Optional Boards

There are the three installation types of the optional boards in DVS-7200A.

<Type 1> The type that the optional board is inserted in the slot.

<Type 2> The type that the optional board is connected onto the connector of the pre-installed board and is secured by the screws.

<Type 3> The type that the optional board is connected onto the connector of the pre-installed board.

The installation procedures are described below.

<Type 1>

This Type's Optional Boards

Slot No.	Optional board
2	CC-81 board (BKDS-7420) or YC-59 board (BKDS-7445)
4, 5	ADC-22 and ENC-34 boards (BKDS-7133)
6, 8	CRK-10 board (BKDS-2031)
11	MIX-35 board (BKDS-7250 when using BKDS-7025/7026) or MIX-35 board (BKDS-7340 when using BKDS-7015)
16 to 18	DI-36 board (BKDS-7103) ADC-21 board (BKDS-7110)

(1) Install the optional board. (Refer to “4-3-2. Inserting/Pulling Out of Plug-in Boards”.)

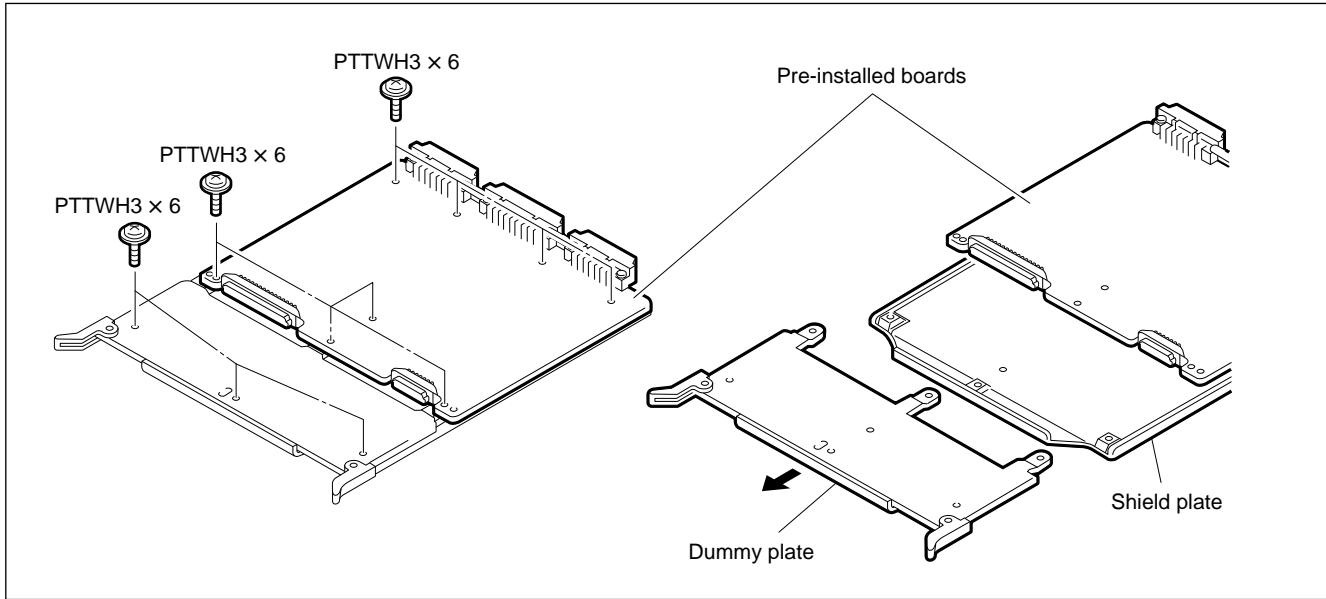
<Type 2>

This Type's Optional Boards

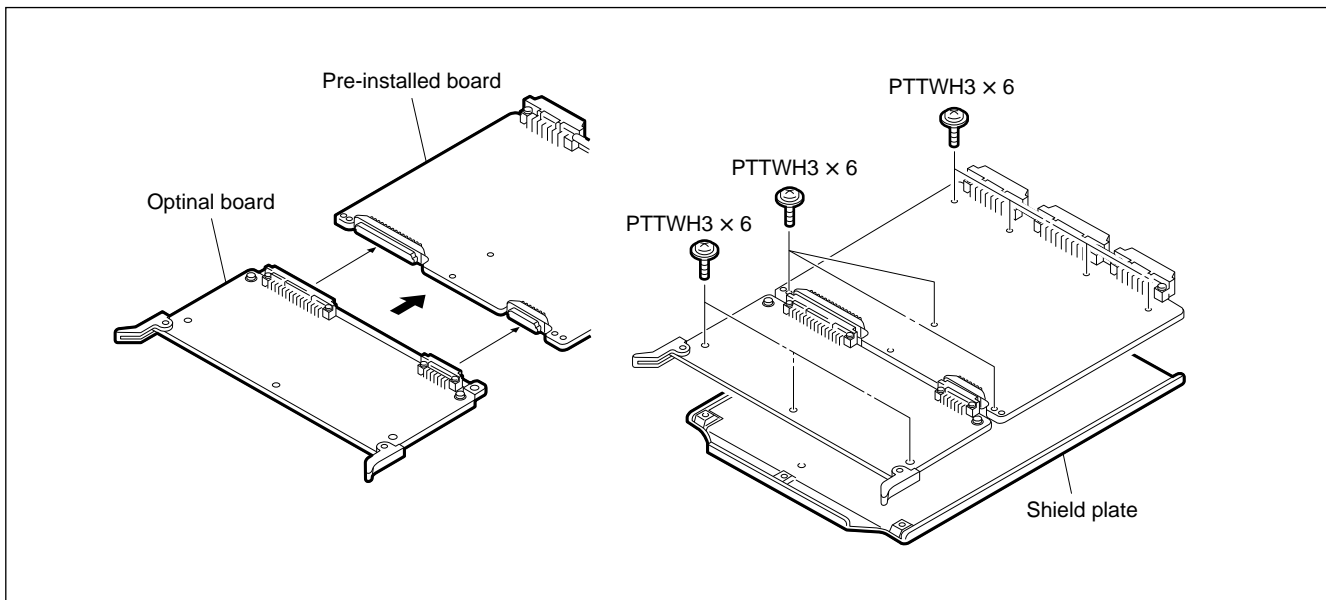
Slot No.	Optional board	Pre-installed board
2	MY-66 board (BKDS-2041)	CC-81 board (BKDS-7420) or YC-59 board (BKDS-7445)
6, 8	CRK-11 board (BKDS-2032)	CRK-10 board (BKDS-2031)
7, 9	BD-26 board (BKDS-7270) or BD-35 board (BKDS-7271)	MIX-35 board
11	BD-26 board (BKDS-7270) or BD-35 board (BKDS-7271)	MIX-35 board (BKDS-7250 when using BKDS-7025/7026) or MIX-35 board (BKDS-7340 when using BKDS-7015)

Install the optional board to the pre-installed board or the optional board in the following procedures.

- (1) Remove the eleven screws secured to the pre-installed board, shield plate and dummy plate.



- (2) Connect the optional board to the connectors on the pre-installed board.
- (3) Secure the optional board and shield plate by ten screws.



<Type 3>

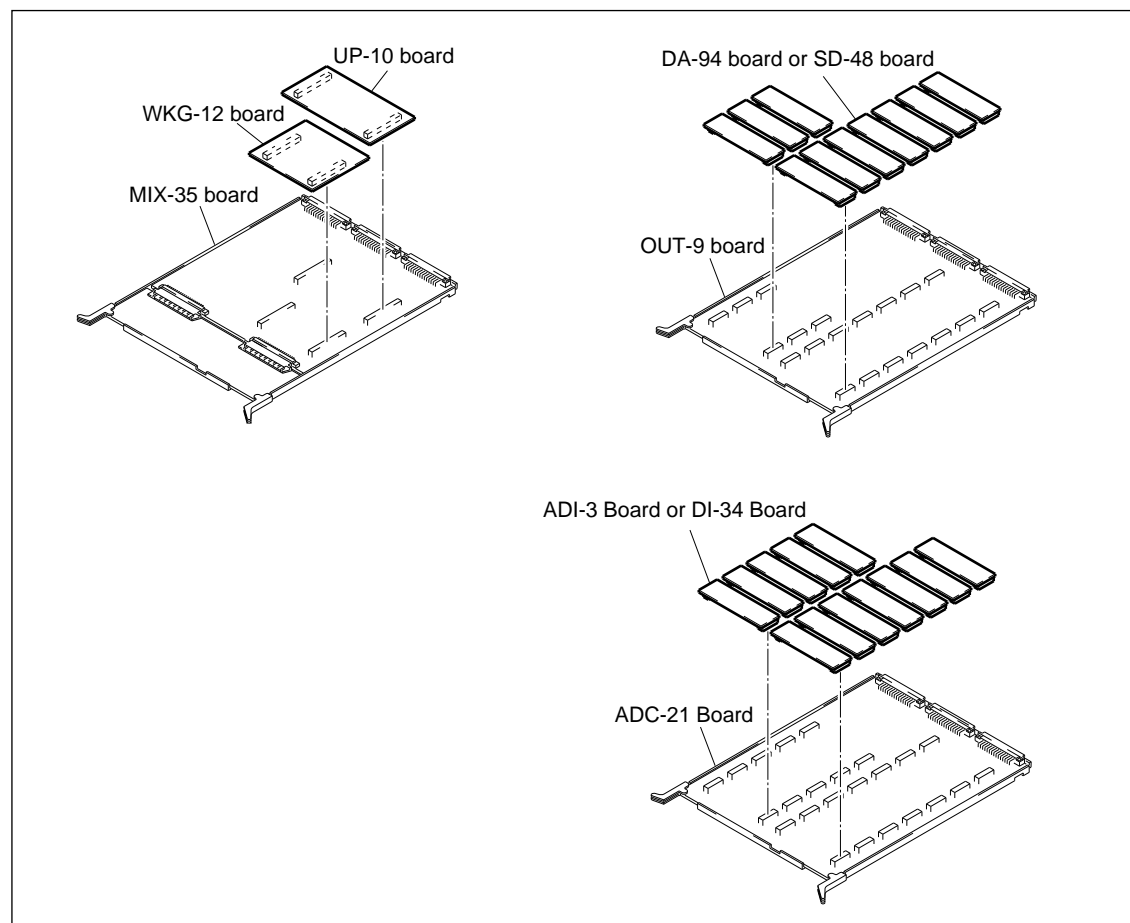
This Type's Optional Boards

Slot No.	Optional board	Pre-installed board
7, 9	UP-10 board (BKDS-7280)	MIX-35 board
	WKG-12 board (BKDS-2070)	
11	UP-10 board (BKDS-7280)	MIX-35 board (BKDS-7250 when using BKDS-7025/7026) or MIX-35 board (BKDS-7340 when using BKDS-7015)
	WKG-12 board (BKDS-2070)	MIX-35 board (BKDS-7250 when using BKDS-7025/7026) or MIX-35 board (BKDS-7340 when using BKDS-7015)
12, 13	DA-94 board (BKDS-7161)	OUT-9 board
	SD-48 board (BKDS-7163)	
16 to 18	ADI-3 board (BKDS-7111)	ADC-21 board (BKDS-7110)
	DI-34 board (BKDS-7113)	

After checking the installation direction of the optional board by its connector number, connect the optional board to the connectors on the pre-installed board.

Note

When installing the optional boards, confirm that the connectors are tightly connected. If the connectors cannot be completely connected, the optional board may be placed in the other way.



4-3-4. Installation of BKDS-7690 (Redundant Power Supply Unit)

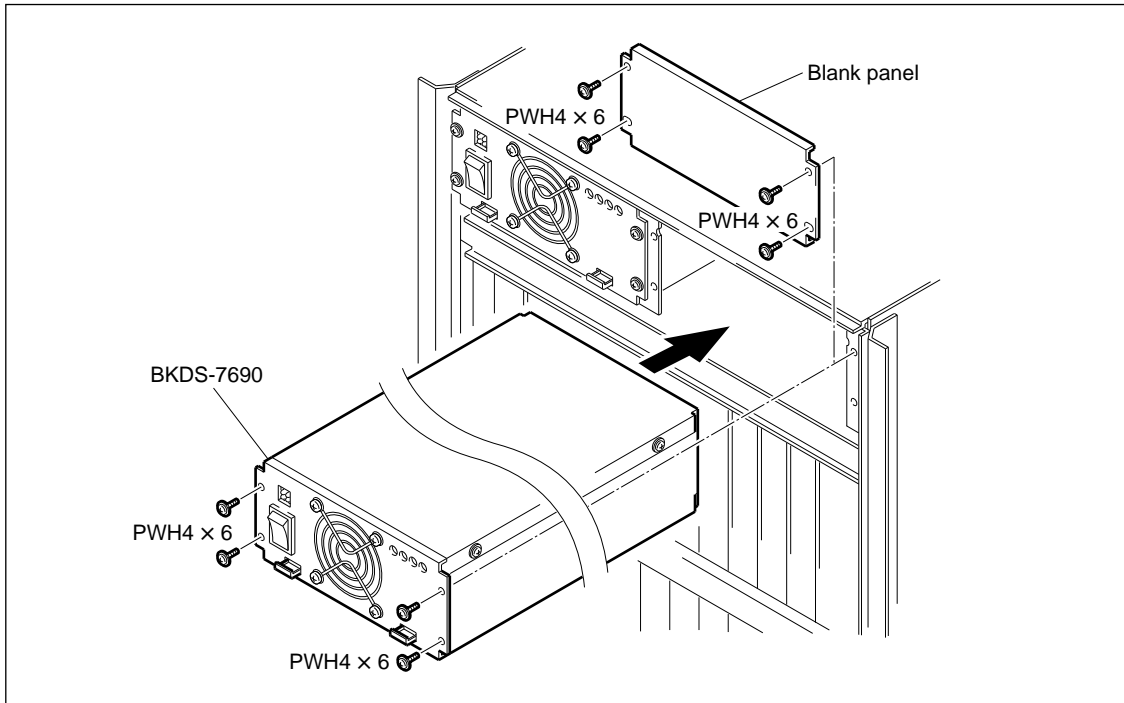
WARNING

To avoid shock hazards, be sure to turn off the breaker at the outside of DVS-7200A or unplug the power cord when installing BKDS-7690.

Contents

Power unit : 1 pc
Screw (PWH4 × 6) : 4 pcs

- (1) Detach the front panel of DVS-7200A. (Refer to “4-3-1. Removing and Installing of Front Panel”.)
- (2) Remove the pre-installed blank panel of BKDS-7690 as shown in the following figure.
(Four screws PWH4 × 6)
- (3) Properly insert BKDS-7690 to the pre-install position.
- (4) Secure BKDS-7690 to DVS-7200A by the four screws (PWH4 × 6) supplied with BKDS-7690.
- (5) Turn on the power switch of BKDS-7690.



4-4. Installation of Options for Control Panel

This section is described the installation procedures of the optional equipments that are installed to the control panel.

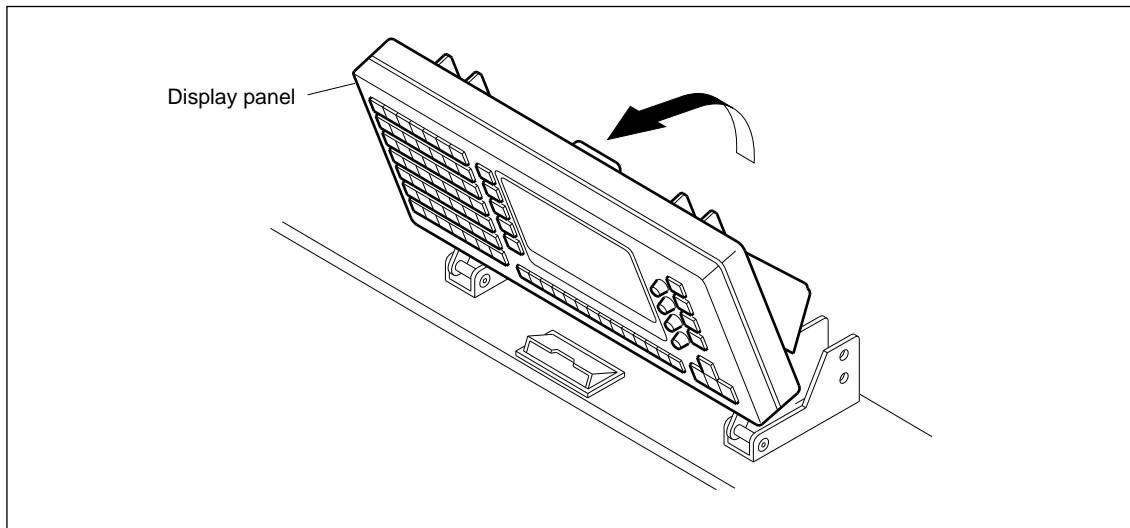
CAUTION

To avoid shock hazards and/or damage to the boards, be sure to turn off the breaker at the outside of the unit or unplug the power cord when installing the optional equipments.

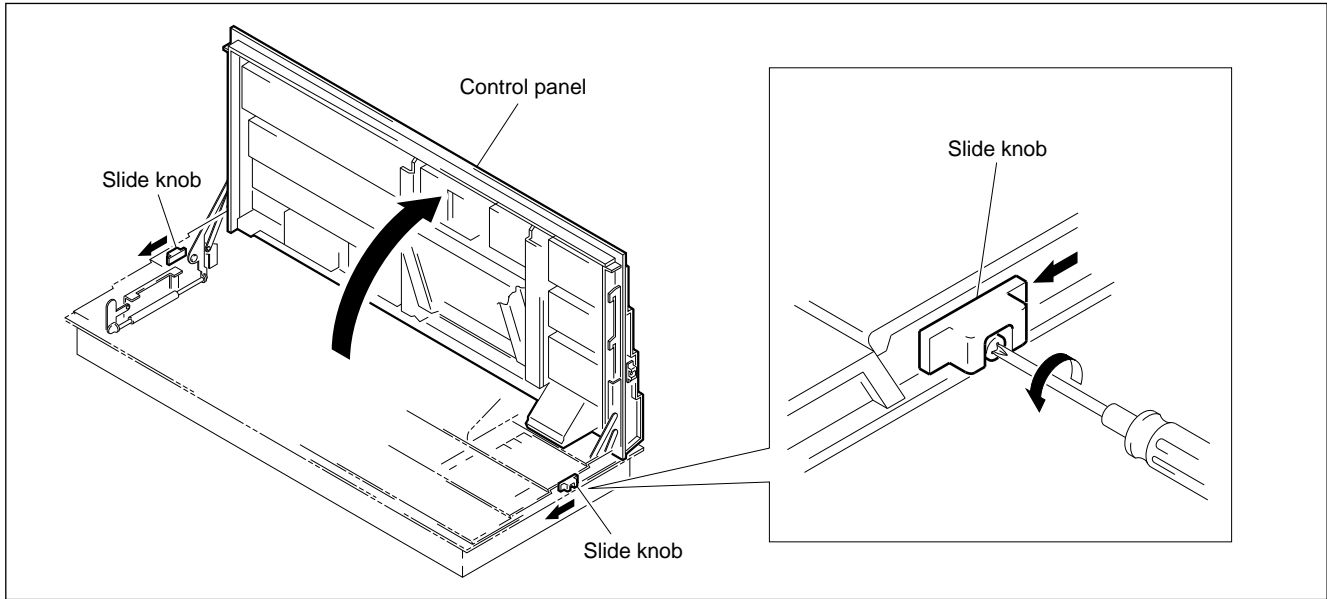
4-4-1. Opening and Closing of Panel

Note

When opening and closing the panel of BKDS-7025 or 7026, tilt the display panel forward.
If not, the display panel is touched against the unit with placed at the back.



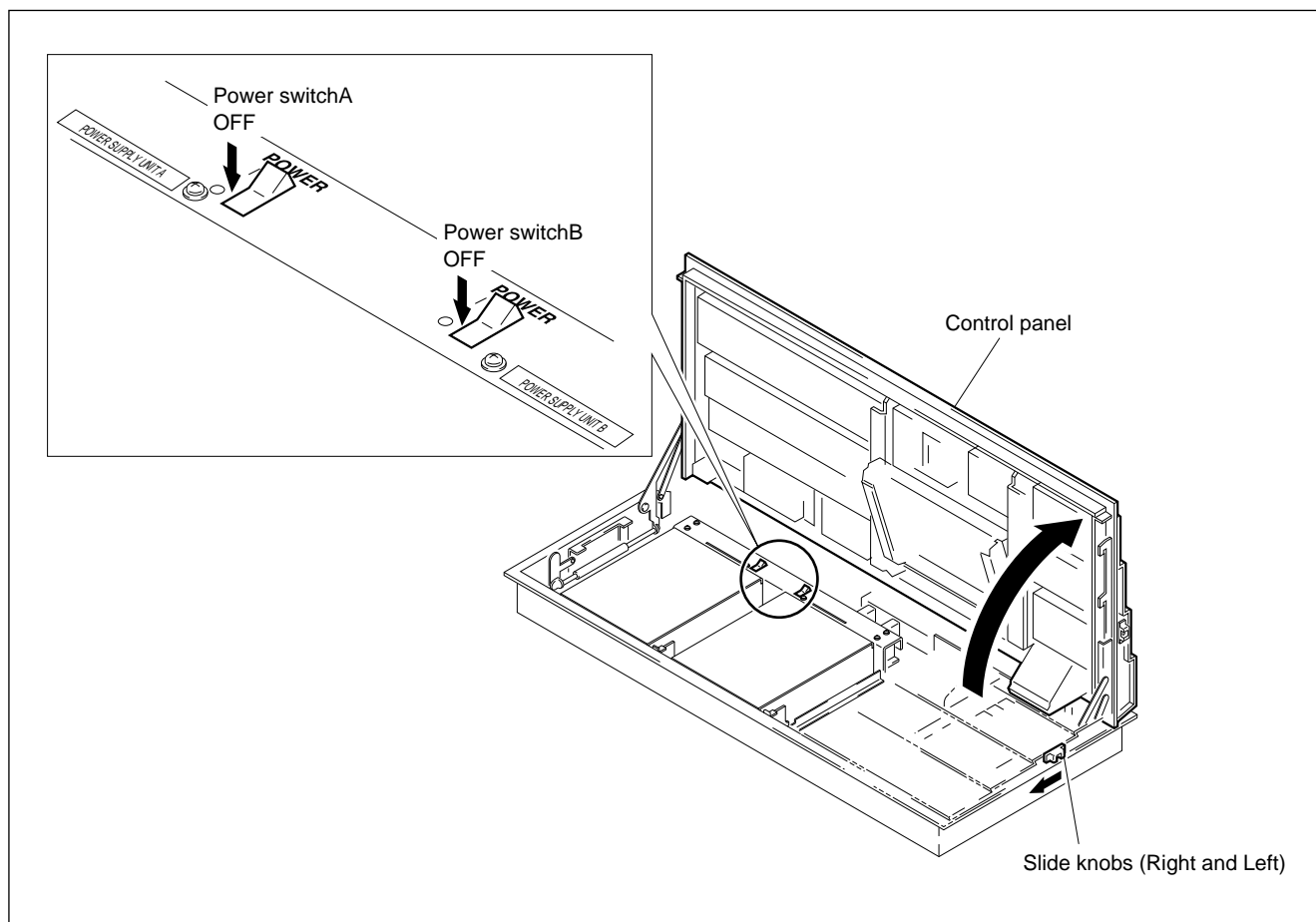
- (1) Loosen the screws of the slide knobs at both sides of the panel.
- (2) Move the slide knobs forward and release the locks.
- (3) Push up the panel and open it.



- (4) Push down the panel until the slide knobs are locked, and close it.
- (5) Tighten the screws of the slide knobs at both sides of the panel.

4-4-2. Turning On/Off the Power Switch

- (1) Open the panel of control panel. (Refer to “4-4-1. Opening and Closing of Panel”.)
- (2) Turn off the power switches A and B in the control panel.



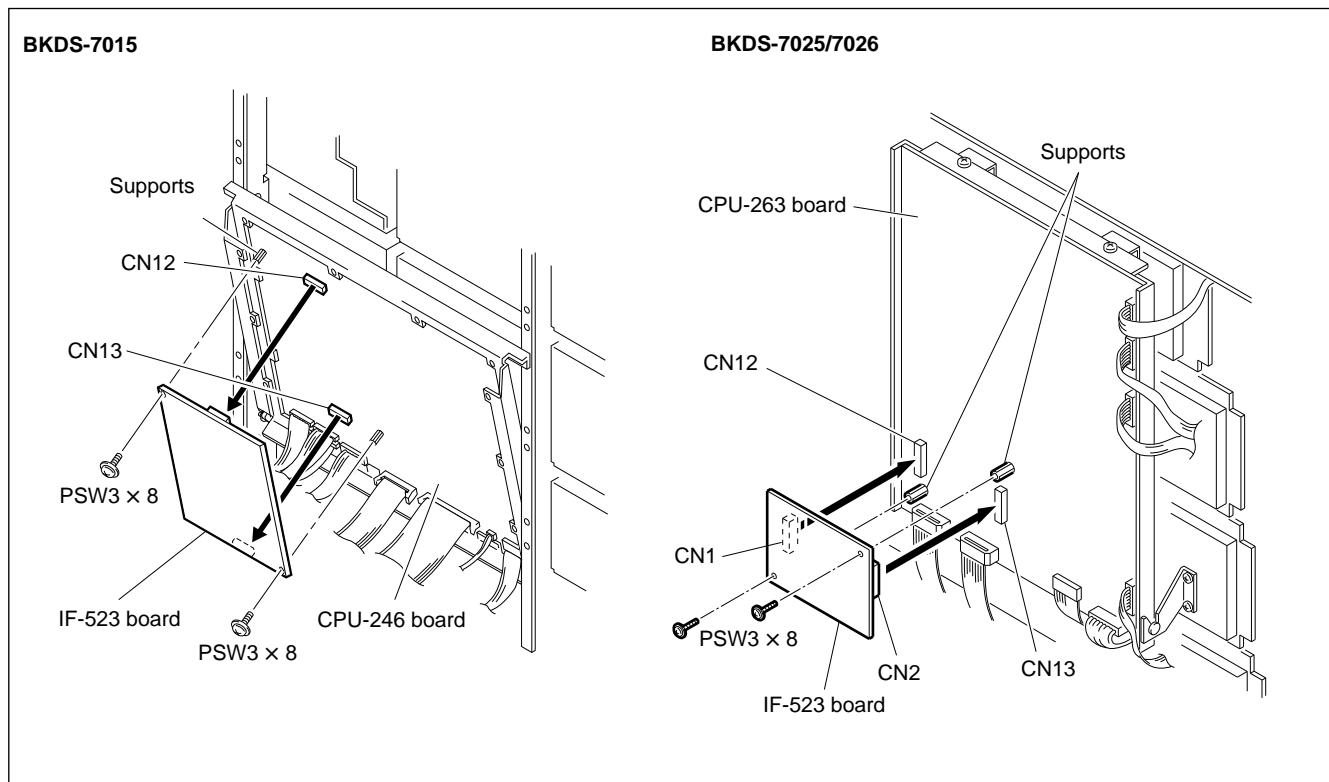
* The above figure shows the BKDS-7015.

4-4-3. Installation of BKDS-7001 (Control Port Expansion Board)

Contents

IF-523 board : 1 pc
Screw (PSW3 × 8) : 2 pcs

- (1) Open the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)
- (2) Turn off the power switches in the control panel.
(Refer to “4-4-2. Turning On/Off the Power Switch”.)
- (3) Connect the CN1 on the IF-523 board to the CN12 on the CPU-246/263 board. Connect the CN2 on the IF-523 board to the CN13 on the CPU-246/263 board.
- (4) Secure the IF-523 board to the supports on the CPU-246/263 board by the two screws (PSW3 × 8) supplied with BKDS-7001.



- (5) Turn on the power switches in the control panel.
(If the one power unit is installed, turn on the power switch of the installed power unit.)
(Refer to “4-4-2. Turning On/Off the Power Switch”.)
- (6) Close the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)

4-4-4. Installation of BKDS-7002 (Source Name Display Unit) (BKDS-7015)

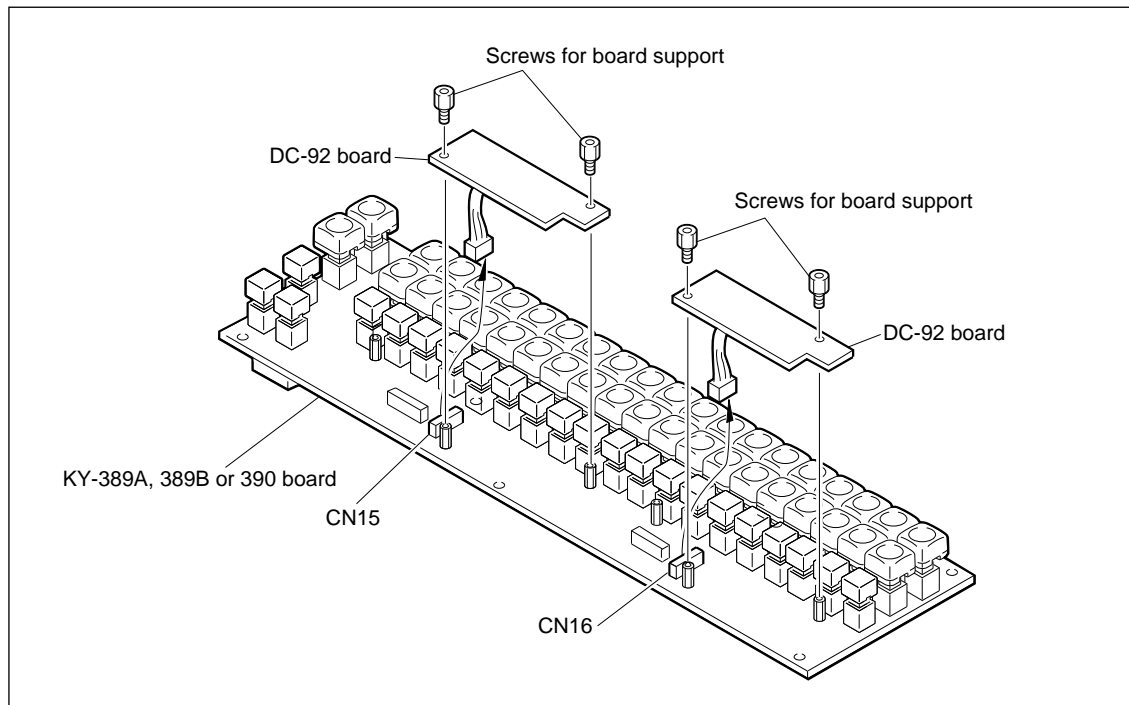
Contents

LE-147 Board	: 2 pcs
LE-148 Board	: 3 pcs
LE-180 Board	: 1 pc
DC-92 Board	: 6 pcs
Screw for board support	: 12 pcs
Screw (+B2.6 × 5)	: 18 pcs

Note

When cleaning the LED unit on the LE-147, 148 or 149 board, use a dry cloth or a cloth moistened with a small amount of water. If using a cloth moistened with a solvent (alcohol and the like), it is possible to be whiten and crack on the surface of the LED unit.

- (1) Open the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)
- (2) Turn off the power switch in the control panel. (Refer to “4-4-2. Turning On/Off the Power Switch”.)
- (3) Remove the KY-389A, 389B or 390 board.
(Refer to “1-2-5. Installation and Removal of Boards” in the maintenance manual part 1.)
- (4) Connect the two harness of the DC-92 board to the CN15 and CN16 on the KY-389A, 389B or 390 board.
- (5) Install the DC-92 board to the KY-389A, 389B or 390 board using the two screws for board support packed with BKDS-7002.



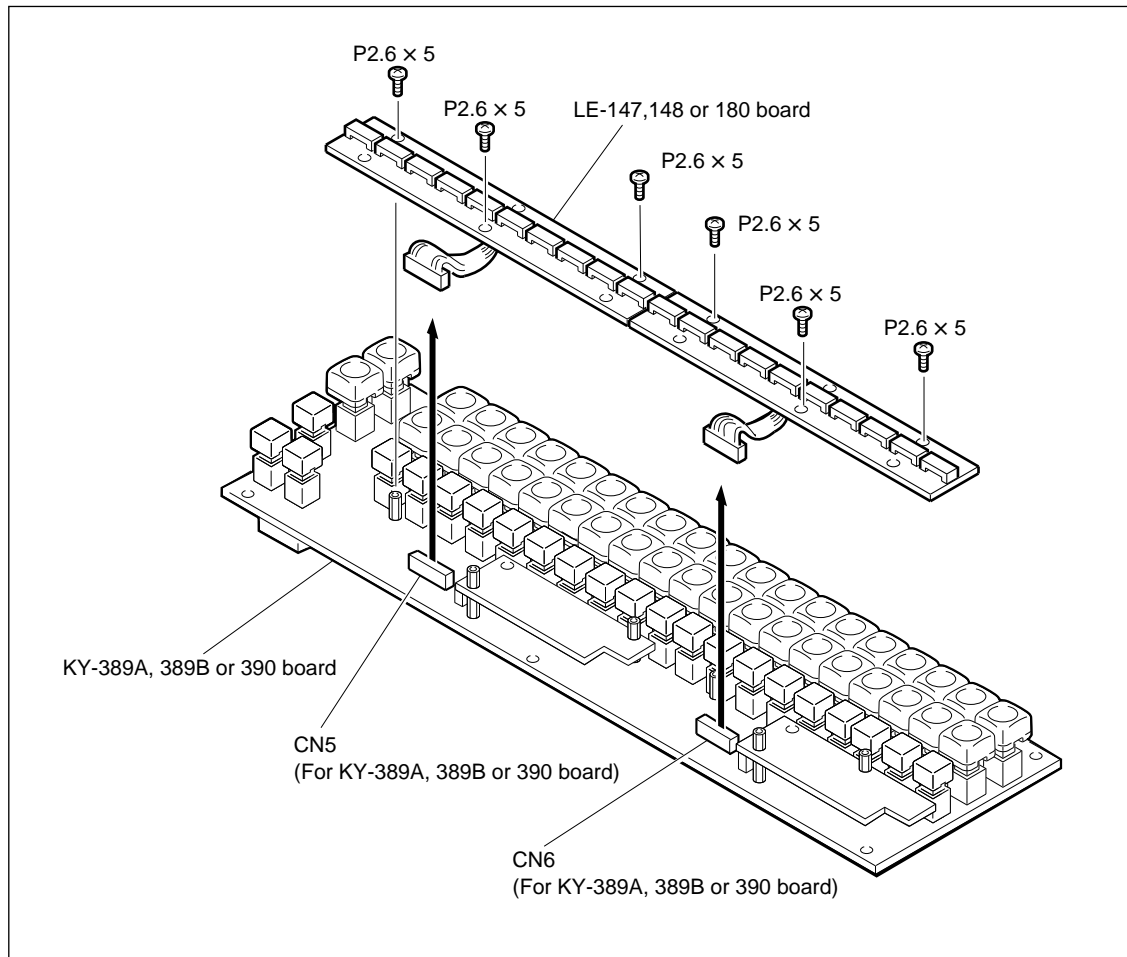
- (6) Connect the harness of the LE-147, 148 or 180 board to the connector on KY-389A, 389B or 390 board.

LE-147 board : CN5 on the KY-390 board

LE-148 board : CN6 on the KY-389A, 389B or 390 board

LE-180 board : CN5 on the KY-389A or 389B board

- (7) Install the LE-147, 148 or 180 board using the six screws (B2.6 × 5) packed with BKDS-7002.



- (8) Install the KY-389A, 389B or 390 board.
(Refer to “1-2-5. Installation and Removal of Boards” in the maintenance manual part 1.)
- (9) Turn on the power switch in the control panel.
(Refer to “4-4-2. Turning On/Off the Power Switch”.)
- (10) Close the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)

4-4-5. Installation of BKDS-7031 Track Ball

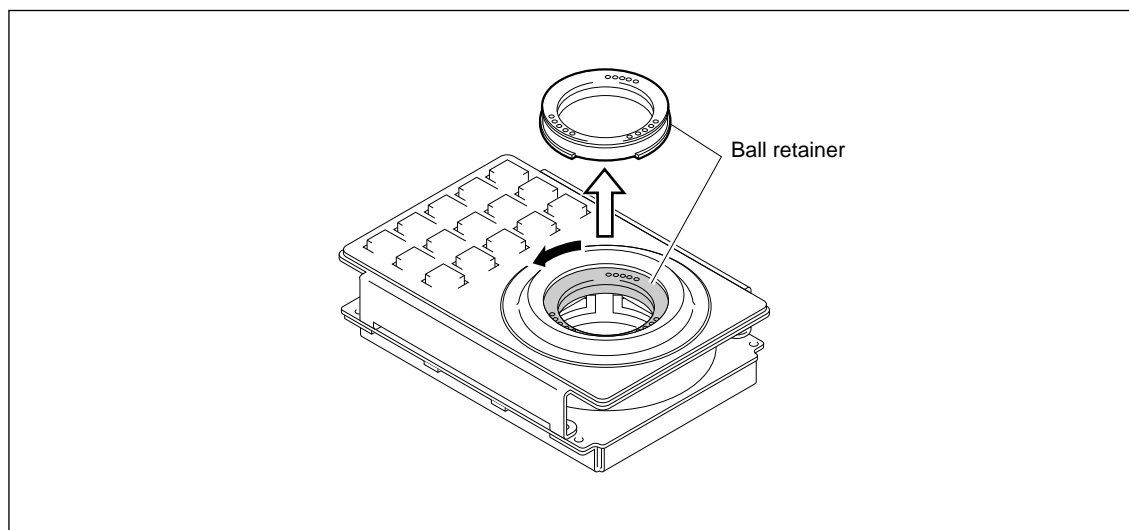
Contents

DME panel (KY-329 board)	: 1 pc
Track ball	: 1 pc
Harness (CTRL5)	: 1 pc
Harness (DC9)	: 1 pc
Screws (PSW3 × 8)	: 4 pcs

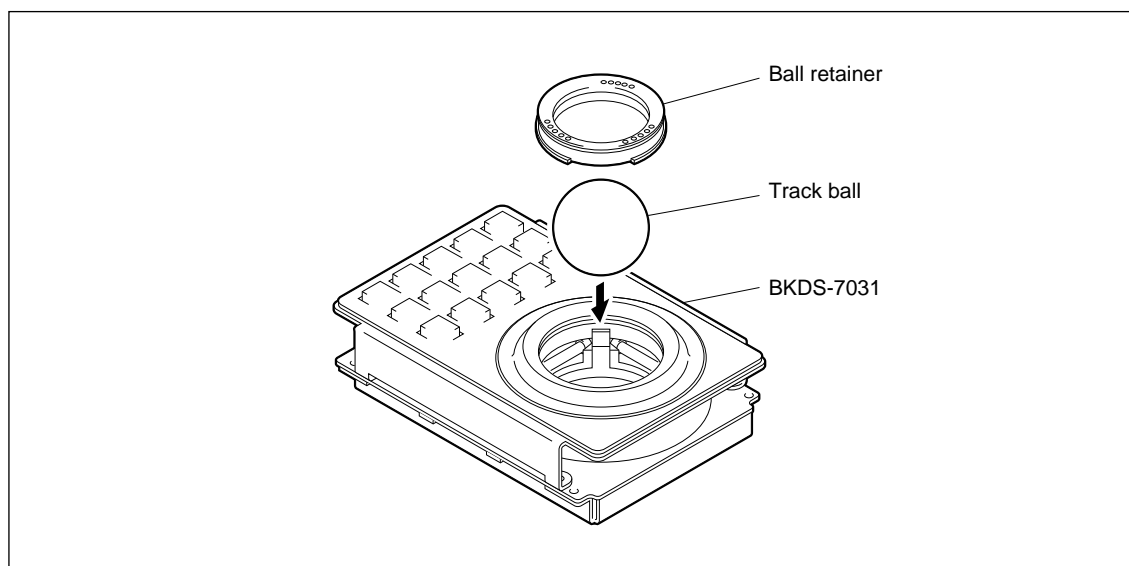
Note

For BKDS-7031 is installed to the control panel, refer to “4-4-6. Installation of Optional Panels (BKDS-7030/7031/7033/7340)”.

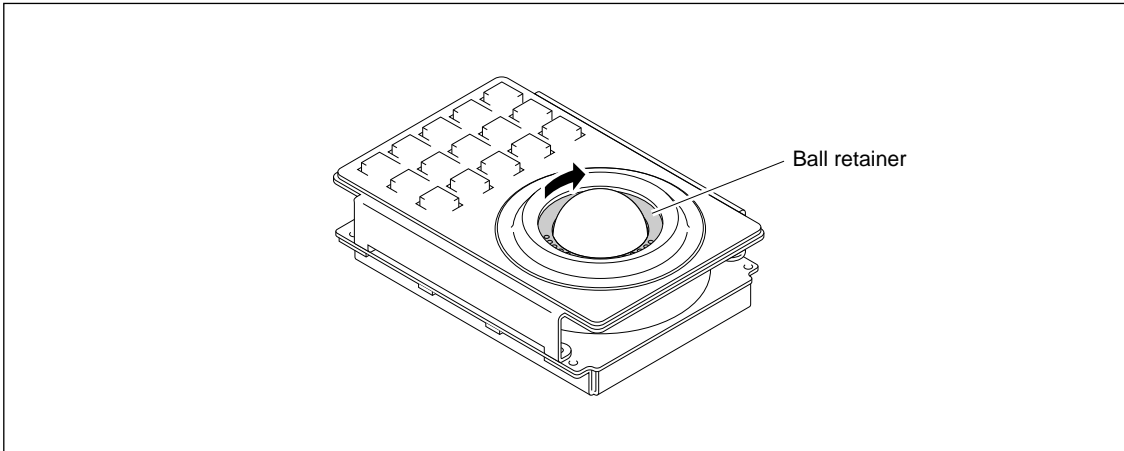
(1) Turn the ball retainer counterclockwise to release a lock.



(2) Install the track ball and the ball retainer.



(3) Turn the ball retainer clockwise to lock.



4-4-6. Installation of Option Panels (BKDS-7030/7031/7033/7340)

Contents of BKDS-7030

Key Frame Control Panel Unit (KY-328 board) : 1 pc
 Harness (CTRL5) : 1 pc
 Harness (DC9) : 1 pc
 Screws (PSW3 × 8) : 4 pcs

Contents of BKDS-7031

DME Control Panel Unit (KY-329 board) : 1 pc
 Harness (CTRL5) : 1 pc
 Harness (DC9) : 1 pc
 Screw (PSW3 × 8) : 4 pcs

Contents of BKDS-7033

Memory Recall Control Panel Unit (KY-395C board) : 1 pc
 Harness (CTRL5) : 1 pc
 Harness (DC9) : 1 pc
 Screw (PSW3 × 8) : 4 pcs

Contents of BKDS-7340

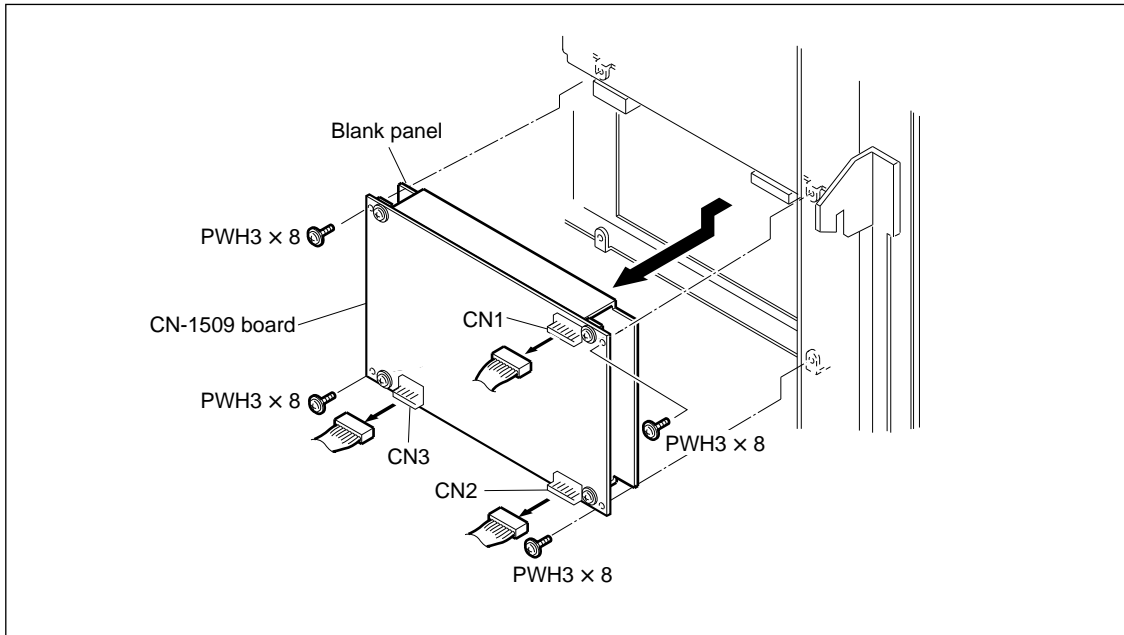
DSK Board/Control Panel Unit (KY-393 board) : 1 pc
 Screw (PSW3 × 8) : 4 pcs

Note

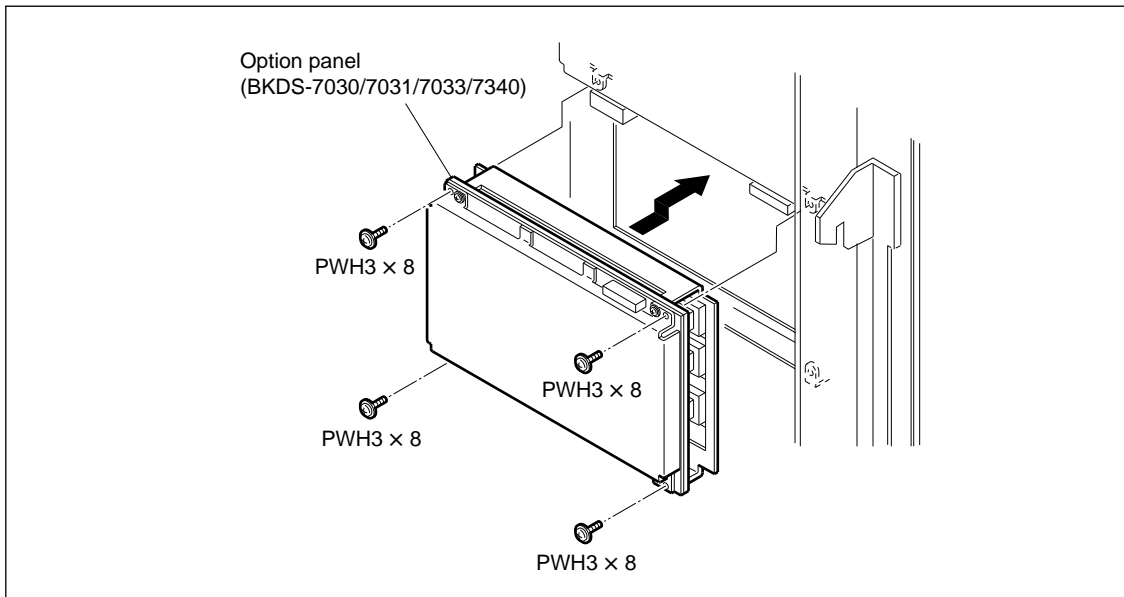
After installing a track ball to BKDS-7031, install BKDS-7031 to the control panel.
 (Refer to “4-4-5. Installation of BKDS-7031 Track Ball”.)

1. Installation to Control Panel (BKDS-7015)

- (1) Open the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)
- (2) Turn off the power switches A and B in the control panel.
 (Refer to “4-4-2. Turning On/Off the Power Switch”.)
- (3) Disconnect the three connectors (CN1 through CN3) on the CN-1509 board (blank panel) that is installed the option panel.
- (4) Remove the four screws (PWH3 × 8) and the blank panel in the direction of the arrow.



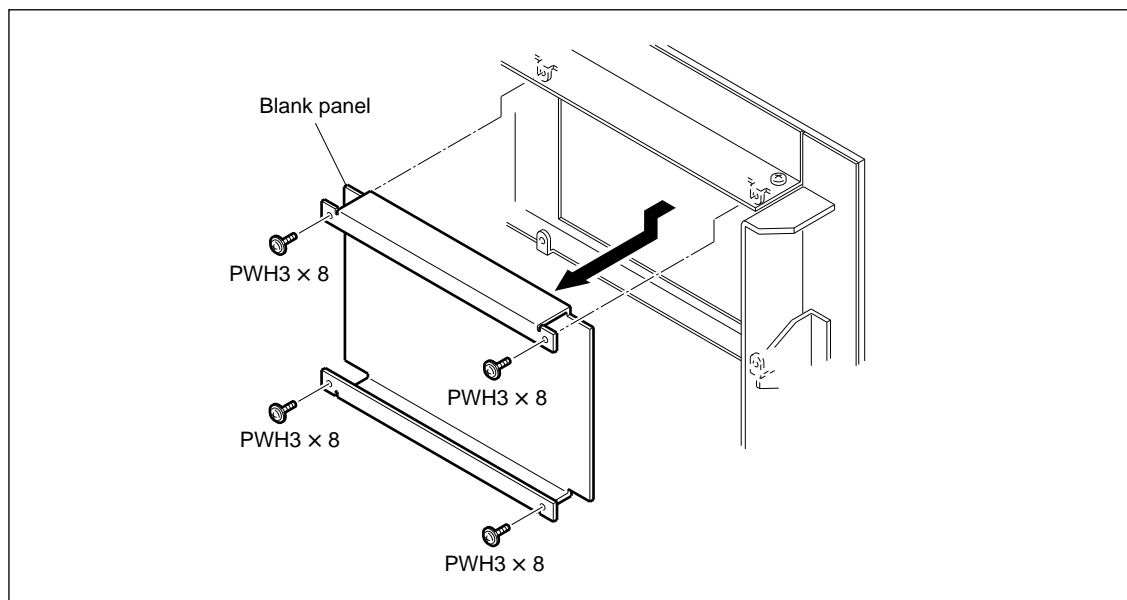
- (5) Put option panel to the position with removed the blank panel at the step (4) and secure it by the supplied four screws (PSW3 x 8).



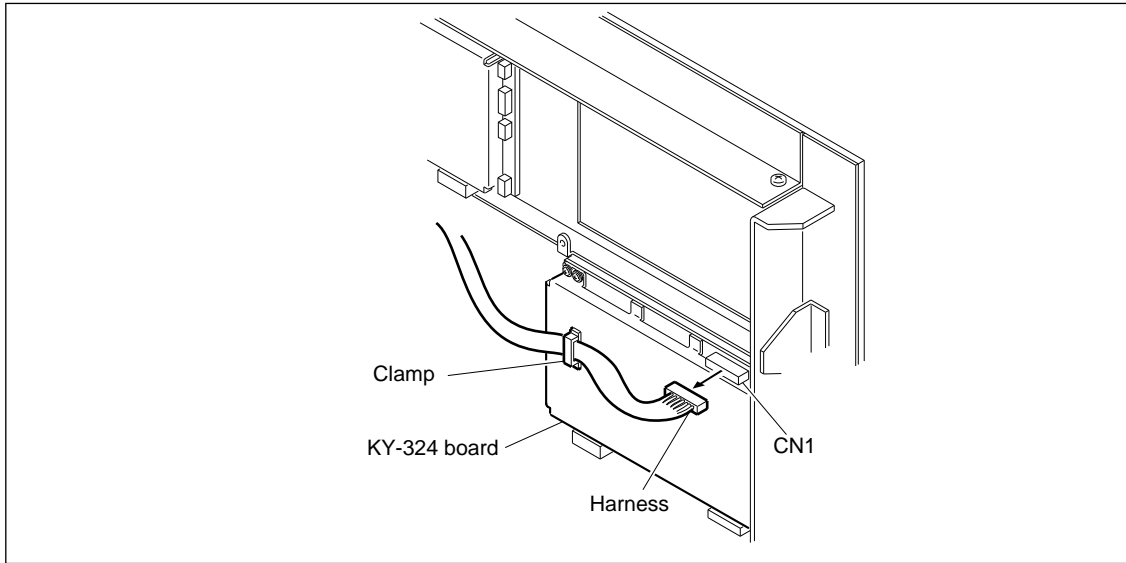
- (6) Connect the three harnesses with disconnected from the CN-1509 board at the step (3) to the CN1 through CN3 on the board of the option panel.
- (7) Turn on the power switches in the control panel.
(Refer to “4-4-2. Turning On/Off the Power Switch”.)
- (8) Close the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)

2. Installation to Control Panel (BKDS-7025/7026)

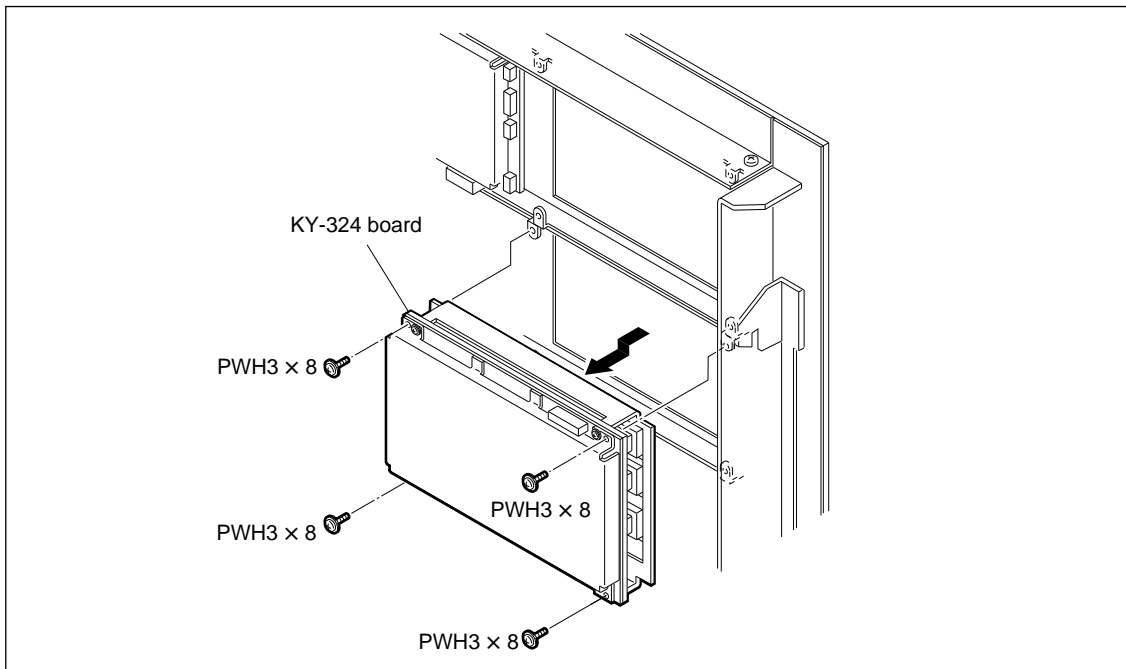
- (1) Open the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)
- (2) Turn off the power switch in the control panel. (Refer to “4-4-2. Turning On/Off the Power Switch”.)
- (3) Remove the four screws (PWH3 × 8) securing to the blank panel and the blank panel in the direction of the arrow.



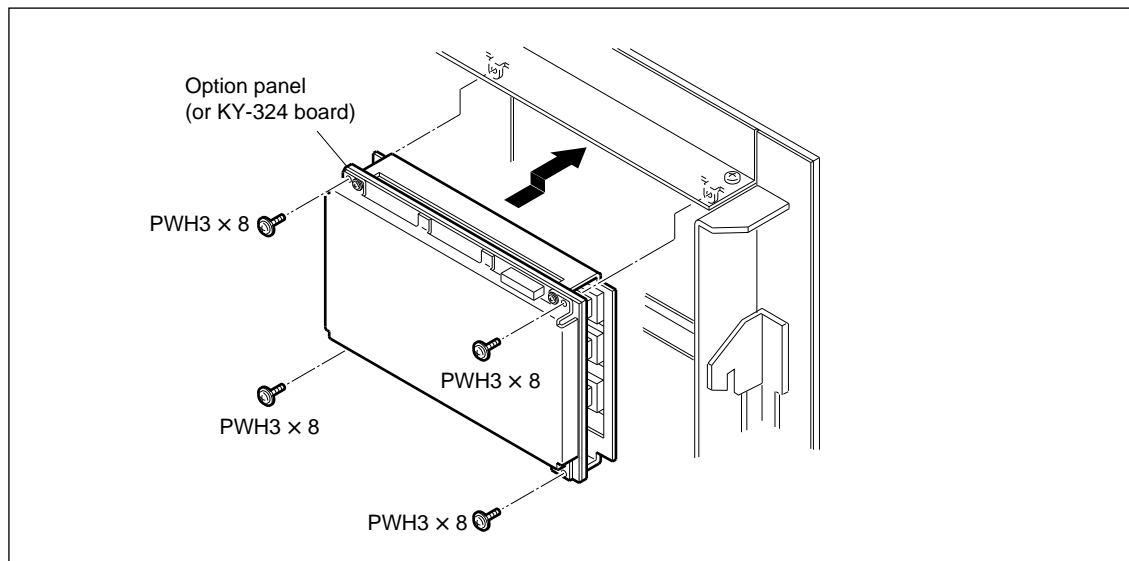
- (4) Disconnect the harness from the CN1 on the KY-324 board.



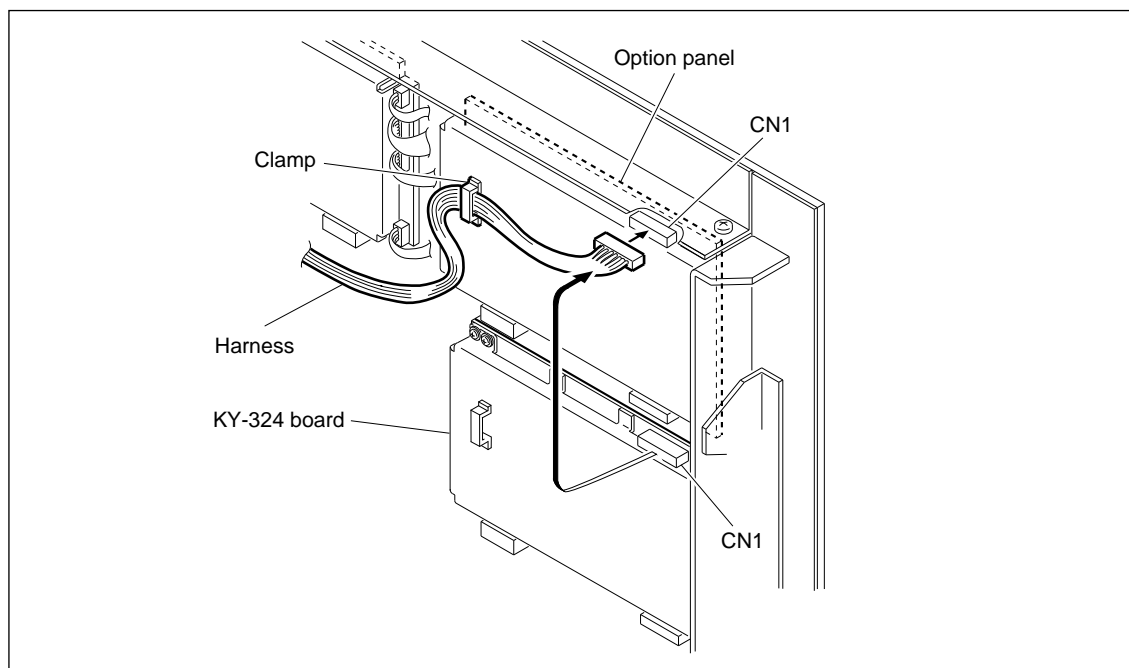
- (5) To change the position of the KY-324 board, remove the four fixing screws (PWH3 × 8) KY-324 board then remove the KY-324 board in the direction of arrow.



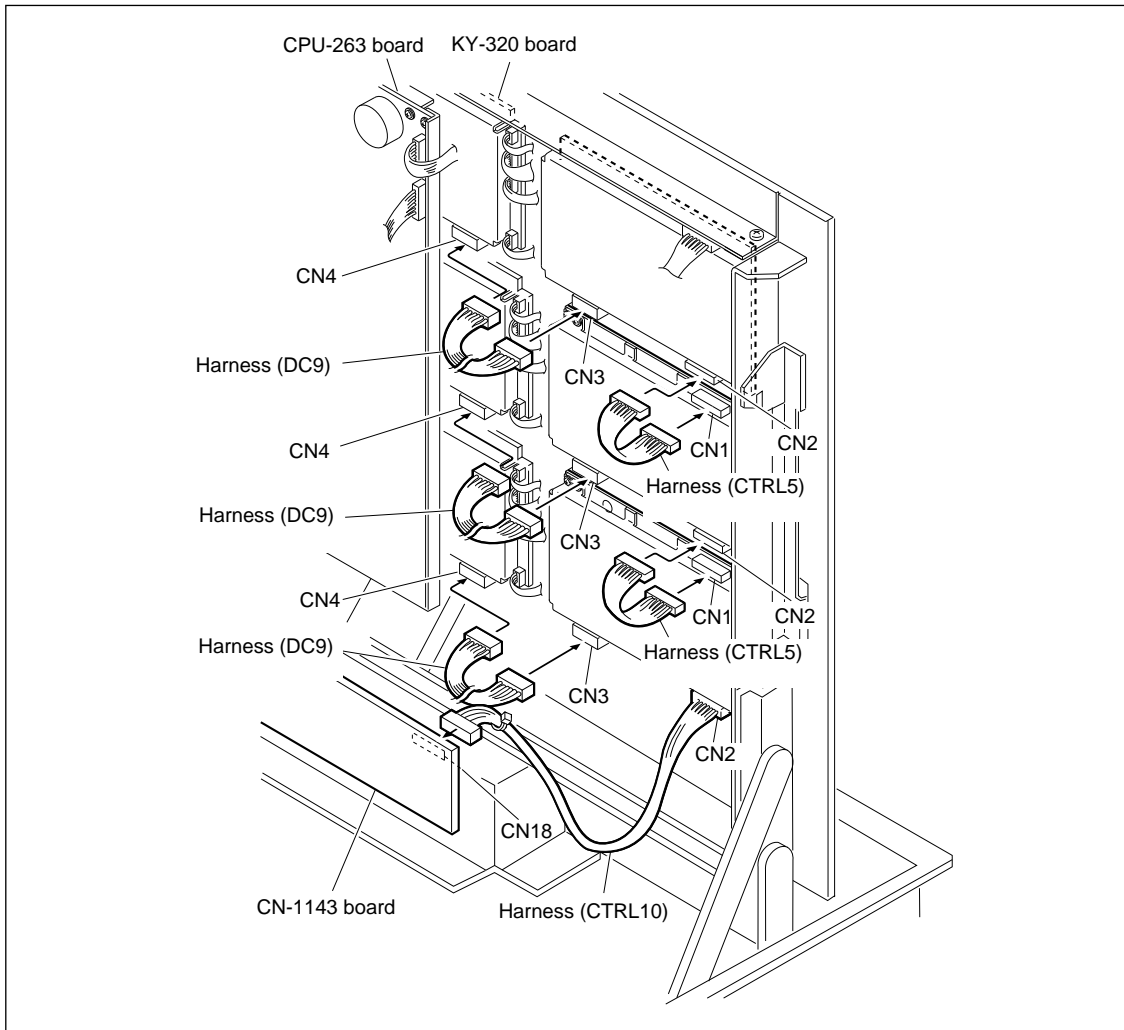
- (6) Place the option panel and the KY-324 board to the desired position with the supplied screws or the four screws (PSW3 × 8) removed from the KY-324 board.



- (7) Connect the harness, which has been disconnected from the KY-324 board in the step (4), to CN1 on the option panel located at the top of the frame.



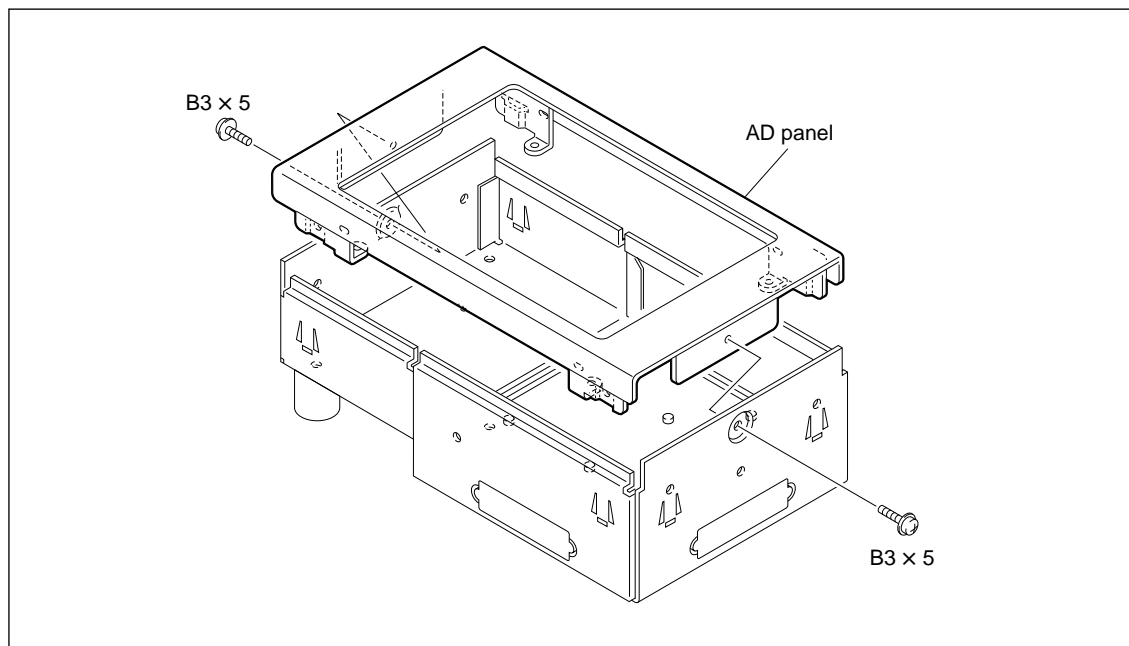
- (8) Connect two harnesses (CTRL5 and DC9) as shown in the figure below. Also, when using the adapter box (BKDS-7075), connect the harness (CTRL10) which is supplied with adapter box (BKDS-7075) as shown in the figure below.



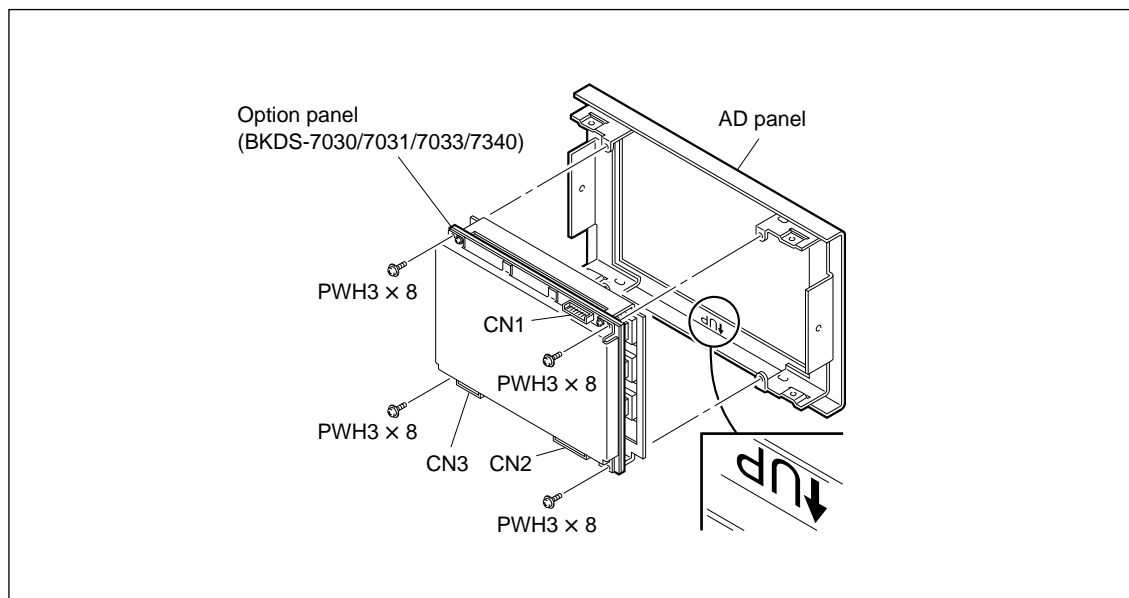
- (9) Turn on the power switches in the control panel.
(Refer to “4-4-2. Turning On/Off the Power Switch”.)
- (10) Close the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)

3. Installation to Adaptor Box (BKDS-7075)

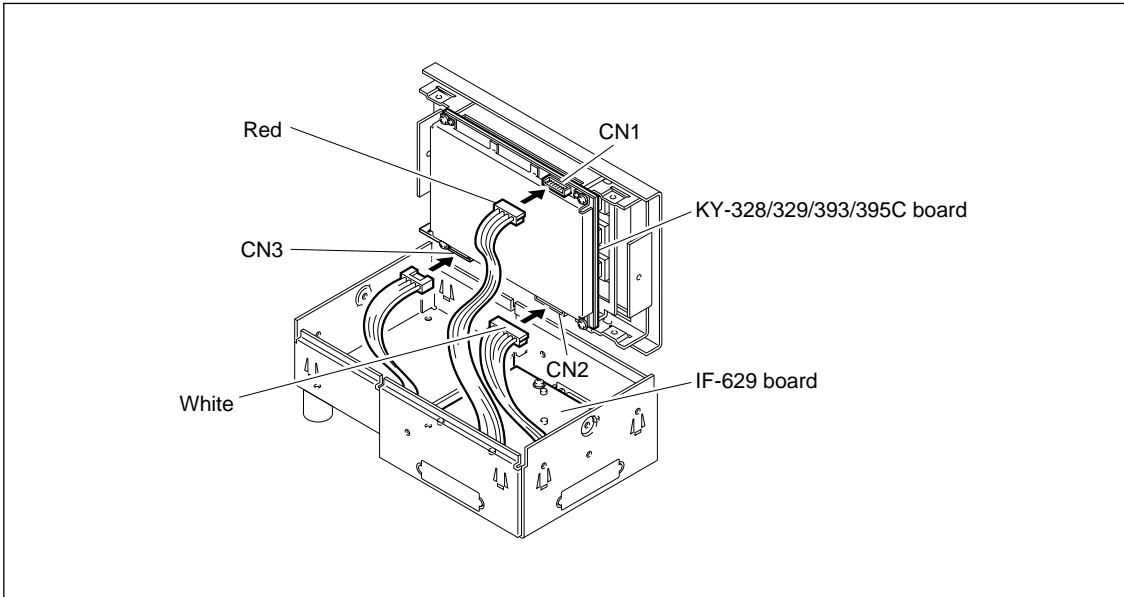
- (1) Open the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)
- (2) Turn off the power switches A and B in the control panel.
(Refer to “4-4-2. Turning On/Off the Power Switch”.)
- (3) Remove the two screws and the AD panel.



- (4) Secure the option panel to the AD panel by the supplied four screws (PSW3 x 8).



- (5) Connect the three harnesses of the IF-629 board to the CN1 through CN3 on the KY-328/329/393/395C board.



- (6) Secure the AD panel to the adaptor box by the two screws.
- (7) Turn on the power switches A and B in the control panel.
(If the one power unit is installed, turn on the power switch of the installed power unit.)
(Refer to “4-4-2. Turning On/Off the Power Switch”.)
- (8) Close the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)

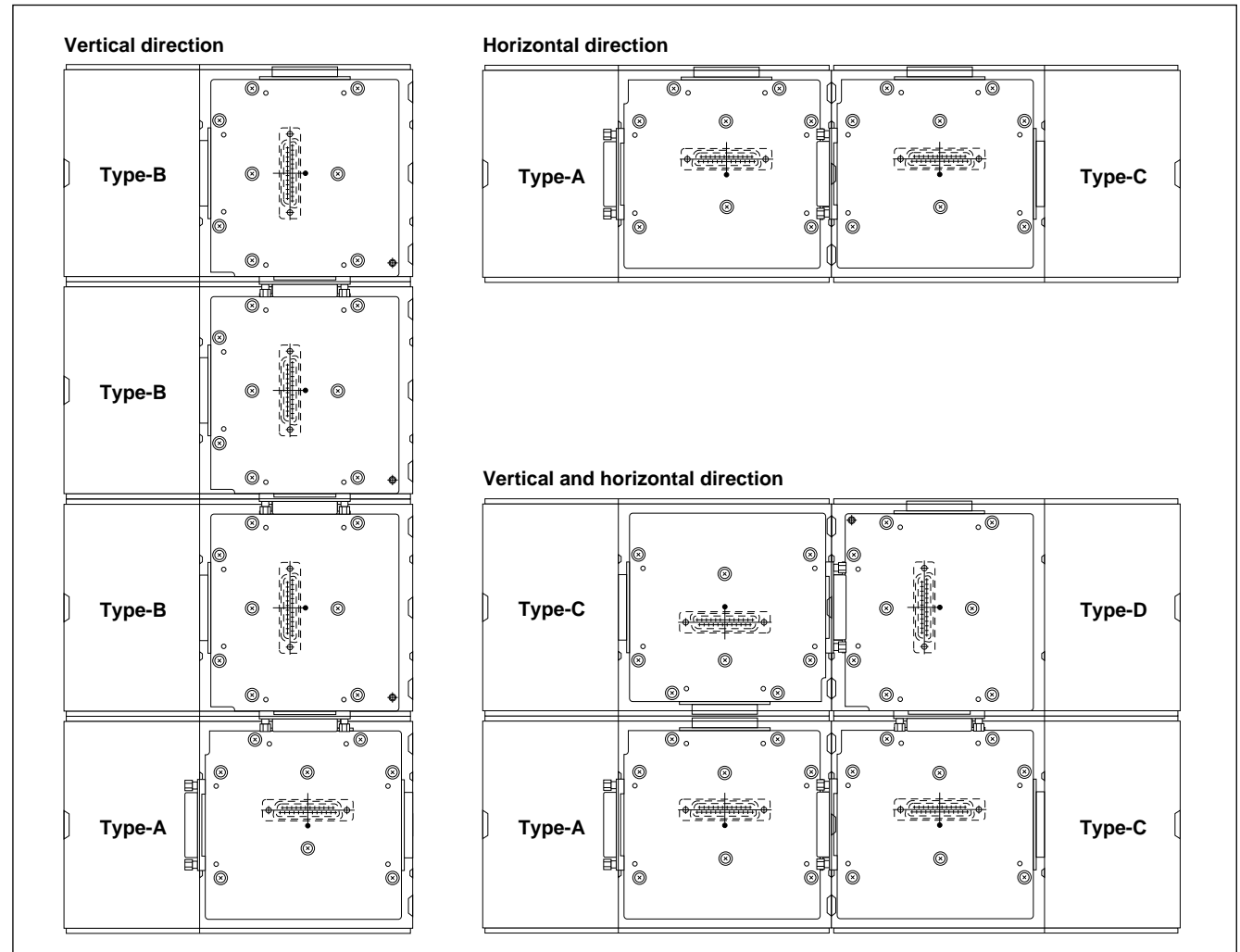
4-4-7. Joining of BKDS-7075 (Control Panel Remote Adaptor)

Contents

Adaptor	: 1 pc
Joint	: 2 pcs
Joint bracket	: 6 pcs
Nylon rivet	: 2 pcs
Screws (B 3 × 5)	: 6 pcs

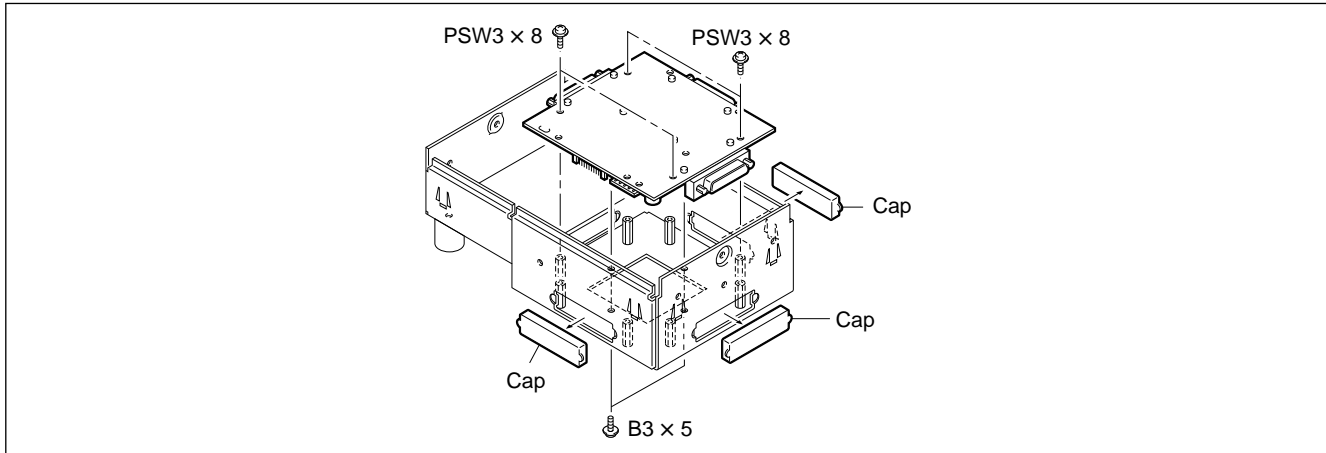
BKDS-7075s can be joined the vertical direction, the horizontal direction or the vertical and horizontal directions as shown in the following figure.

Before joining the BKDS-7075s, reinstall the IF-629 board according to the types (Type-A through -D).

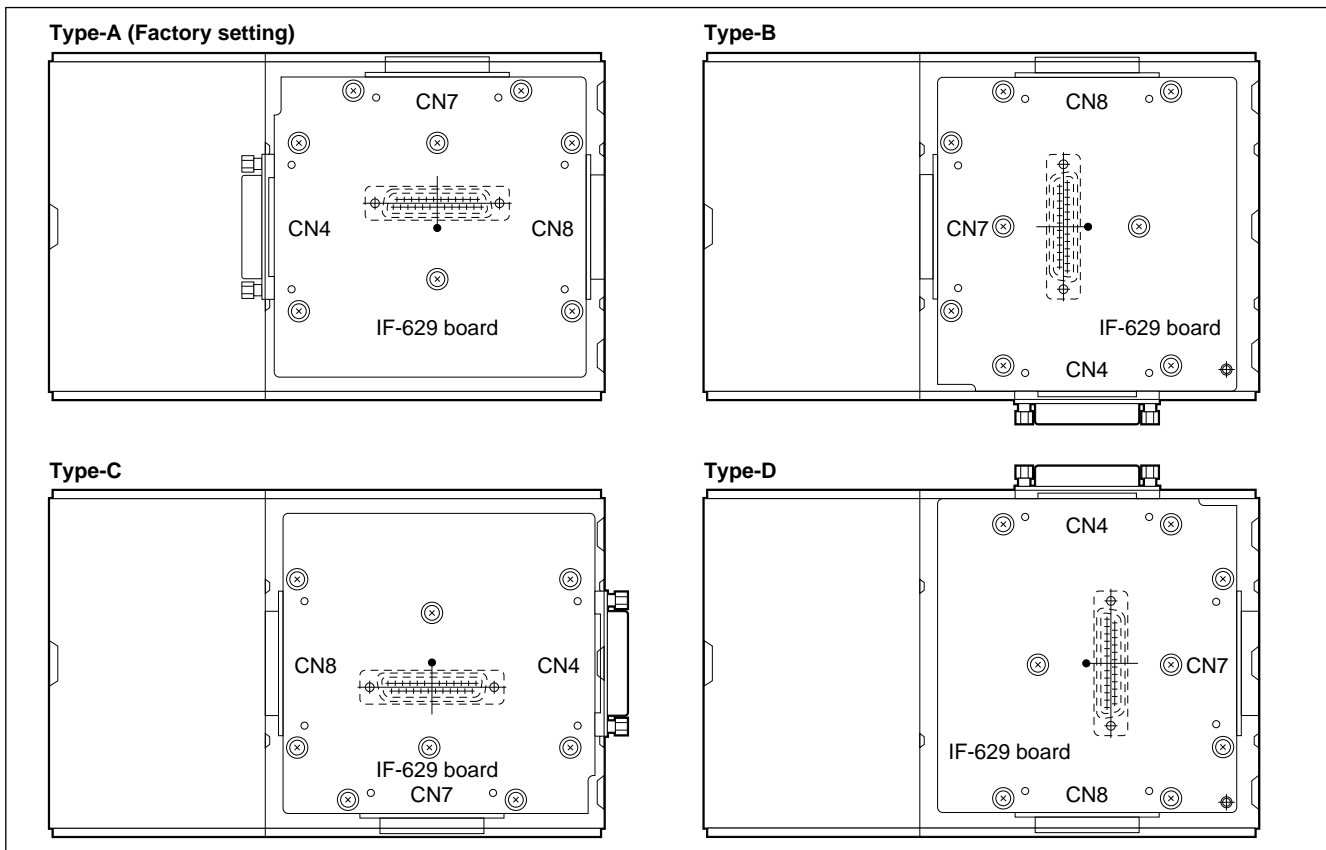


1. Removal and Installation of IF-629 Board

- (1) Remove the AD panel.
(Refer to the step (3) of “3. Installation to Adaptor Box (BKDS-7075)” in the section 4-4-6.)
- (2) Remove the caps and the IF-629 board.
(Refer to “8. IF-629 Board” in the section 1-2-5 of the maintenance manual part 1.)



- (3) Install the IF-629 board according to the type of joining of BKDS-7075s as shown in the following figure. (Refer to “8. IF-629 Board” in the section 1-2-5 of the maintenance manual part 1.)

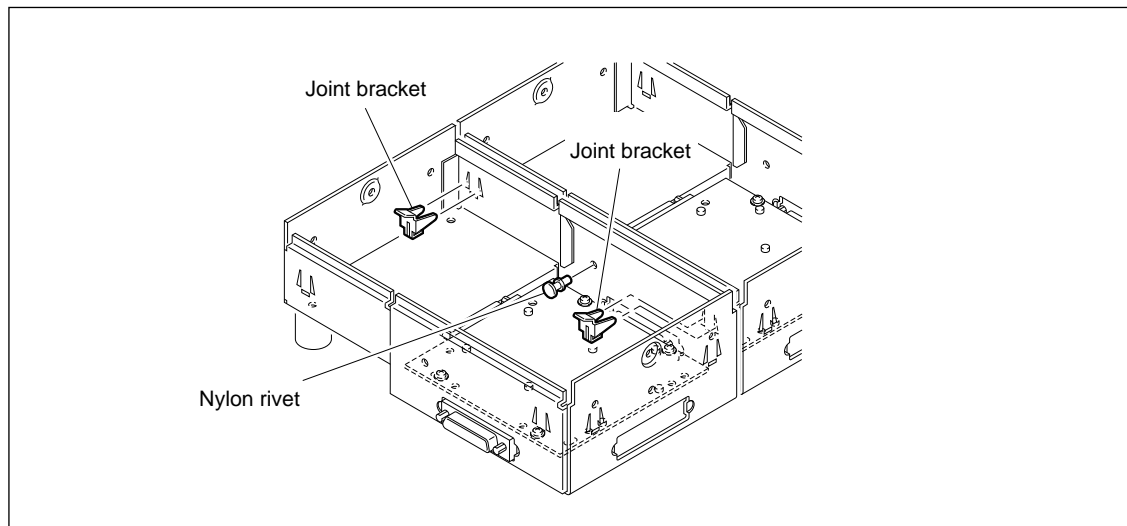


- (4) Install the caps to the connectors (except CN4) on the IF-629 board.
- (5) Install the AD panel to the adaptor box.
(Refer to the step (6) of “3. Installation to Adaptor Box (BKDS-7075)” in the section 4-4-6.)

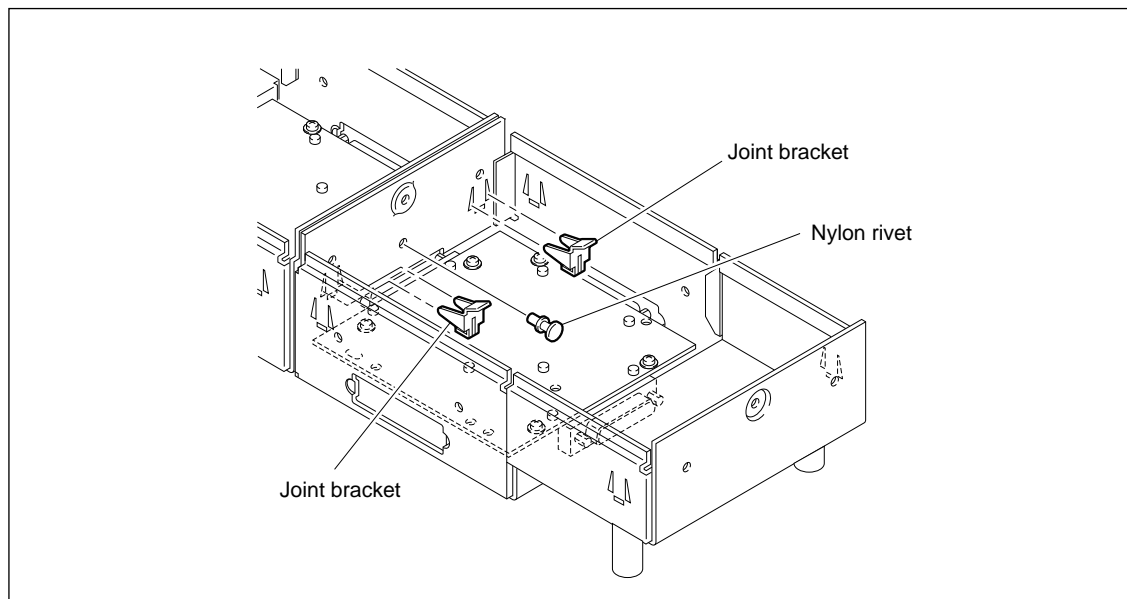
2. Joining of Adaptor Box (BKDS-7075)

- (1) Join the two adaptor boxes (BKDS-7075).
- (2) Press in the nylon rivet as shown in the following figure.
- (3) Press in the two joint brackets as shown in the following figure.

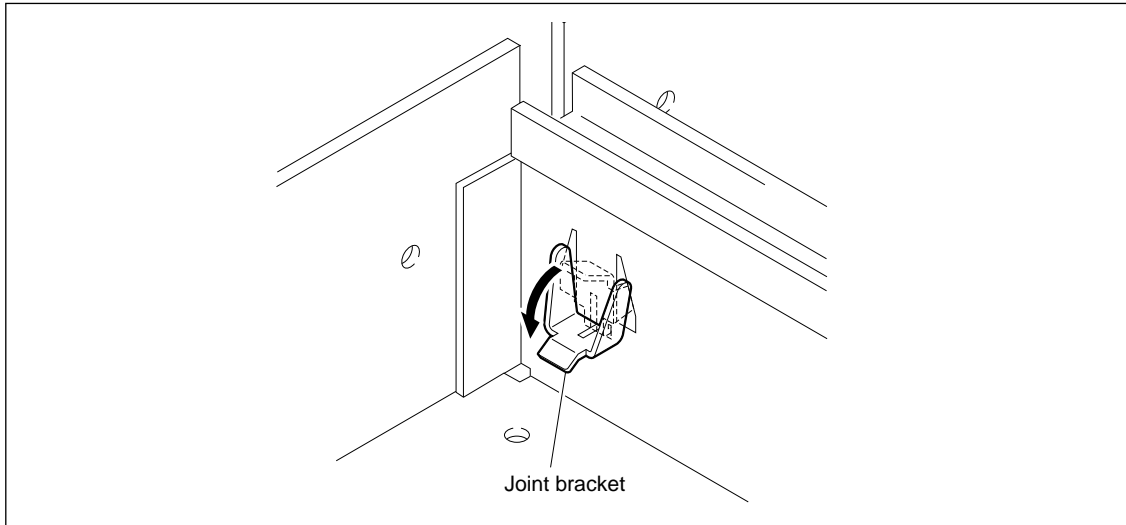
(In the case of the vertical direction)



(In the case of the horizontal direction)



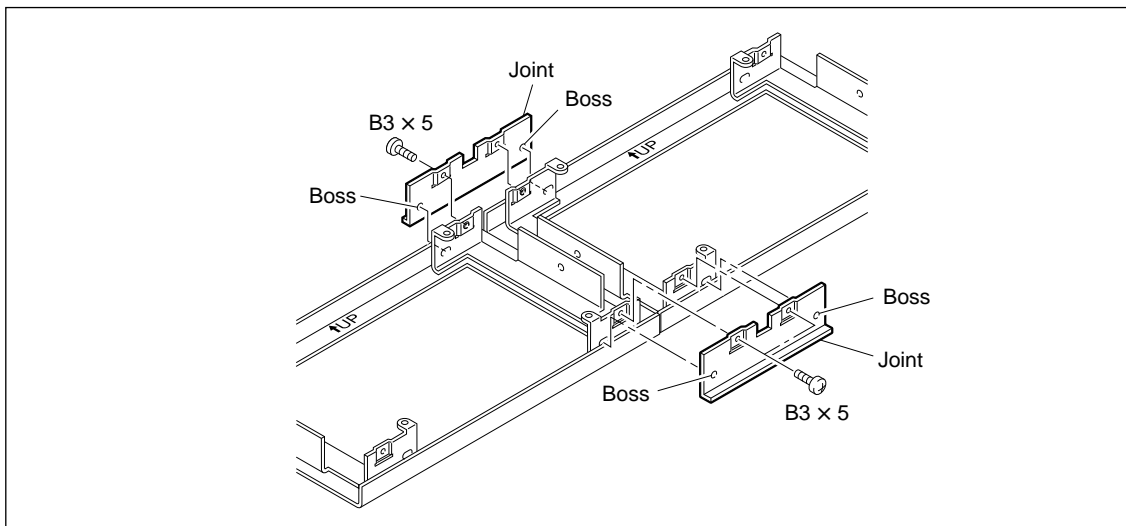
- (4) Lock the two adaptor boxes by pressing down the joint brackets.



3. Joining of AD Panel

In the case of the horizontal direction, join the two AD panels in the following procedures.

- (1) Place the two AD panels as shown in the following figure.
- (2) Put the bosses of the joint in the holes of the AD panel, and then install the joint to the AD panel by the two screws.



4. Installation of AD Panel

- (1) Install the AD panel to the adaptor box.
(Refer to the step (6) of “3. Installation to Adaptor Box (BKDS-7075)” in the section 4-4-6.)

* In the case of the vertical and horizontal directions, join to the vertical direction after joining to the horizontal direction.

4-4-8. Installation of BKDS-7091 (Redundant Power Supply Unit) (BKDS-7015)

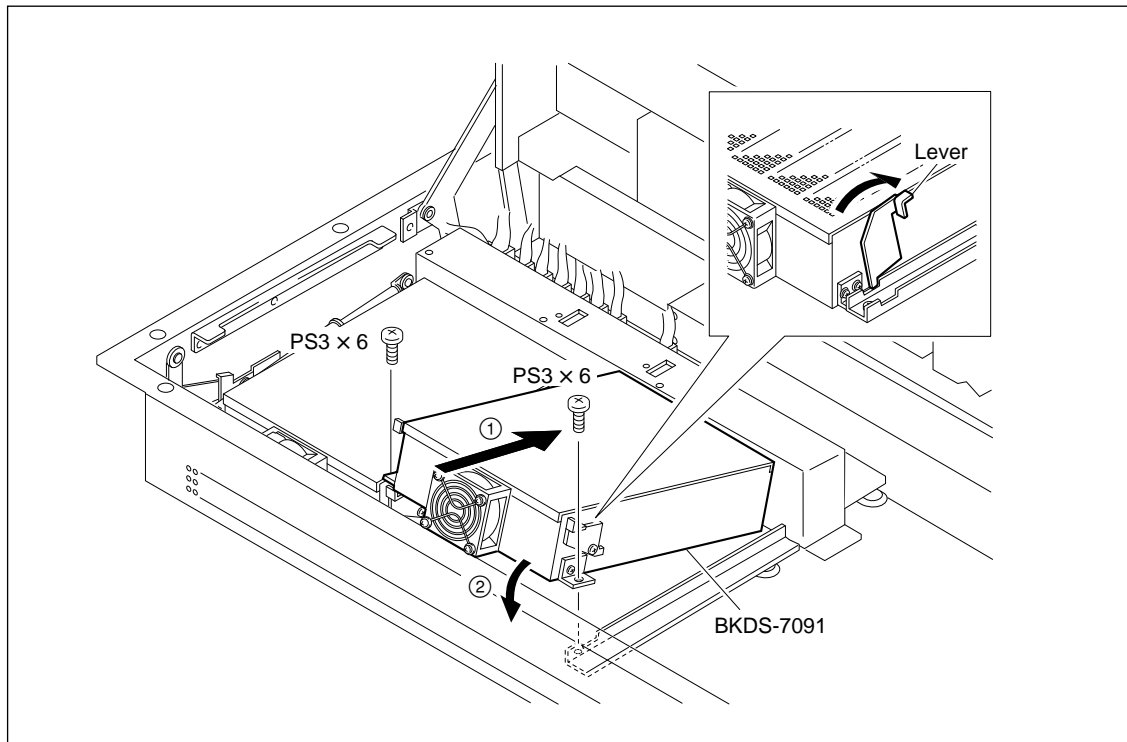
WARNING

To avoid shock hazards, be sure to turn off the breaker at the outside of the control panel or unplug the power cord when installing BKDS-7091.

Contents

Power unit : 1 pc
Screw (PS3 × 6) : 2 pcs

- (1) Open the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)
- (2) Turn off the power switches in the control panel.
(Refer to “4-4-2. Turning On/Off the Power Switch”.)
- (3) Move BKDS-7091 in the direction of arrow ① and put BKDS-7091 in the direction of arrow ②.
- (4) Tilt the levers at both sides of the power unit in the directions of the allow.
- (5) Secure BKDS-7091 to the control panel by the two screws (PS3 × 6) supplied with BKDS-7091.



- (6) Turn on the power switches in the control panel.
(Refer to “4-4-2. Turning On/Off the Power Switch”.)
- (7) Close the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)

4-4-9. Installation of BKDS-7090 (Redundant Power Supply Unit) (BKDS-7025/7026)

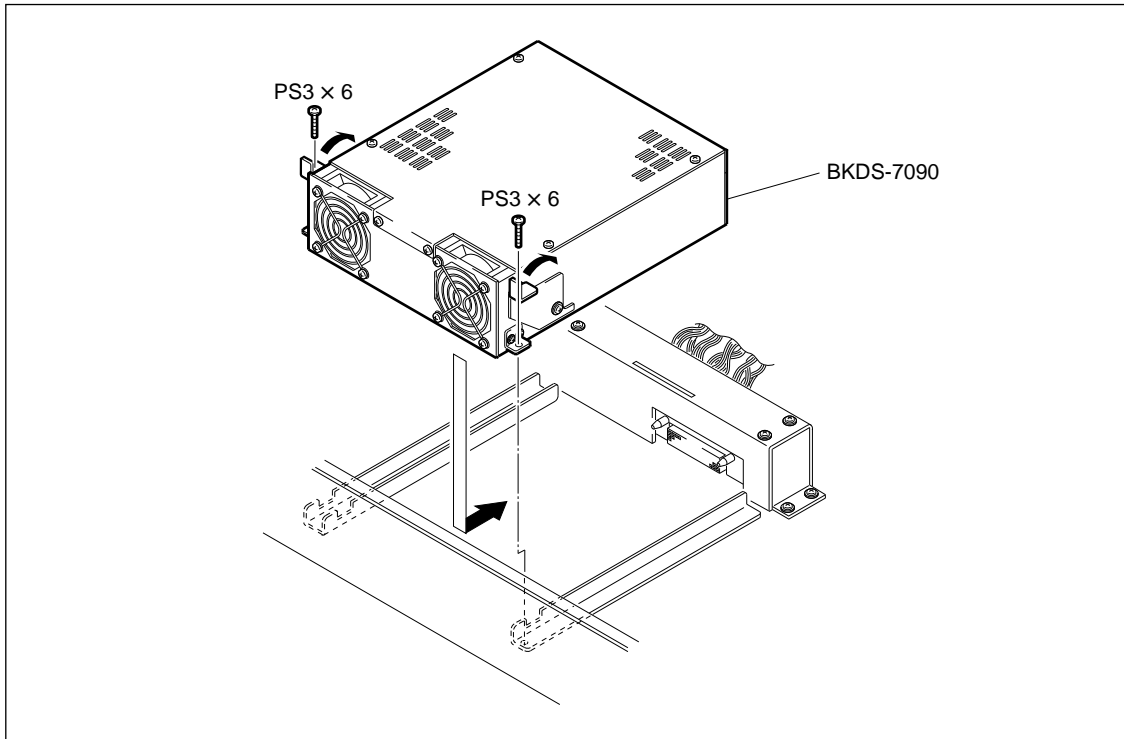
WARNING

To avoid shock hazards, be sure to turn off the breaker at the outside of the control panel or unplug the power cord when installing BKDS-7090.

Contents

Power unit : 1 pc
Screw (PS3 × 6) : 2 pcs

- (1) Open the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)
- (2) Turn off the power switches in the control panel.
(Refer to “4-4-2. Turning On/Off the Power Switch”.)
- (3) Properly insert BKDS-7090 to the pre-install position.
- (4) Put the two levers at both sides of BKDS-7090 in the directions of the allows.
- (5) Secure BKDS-7090 to the control panel by the two screws (PS3 × 6) supplied with BKDS-7090.



- (6) Turn on the power switches in the control panel.
(Refer to “4-4-2. Turning On/Off the Power Switch”.)
- (7) Close the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)

Section 5

Confirmation in Installation

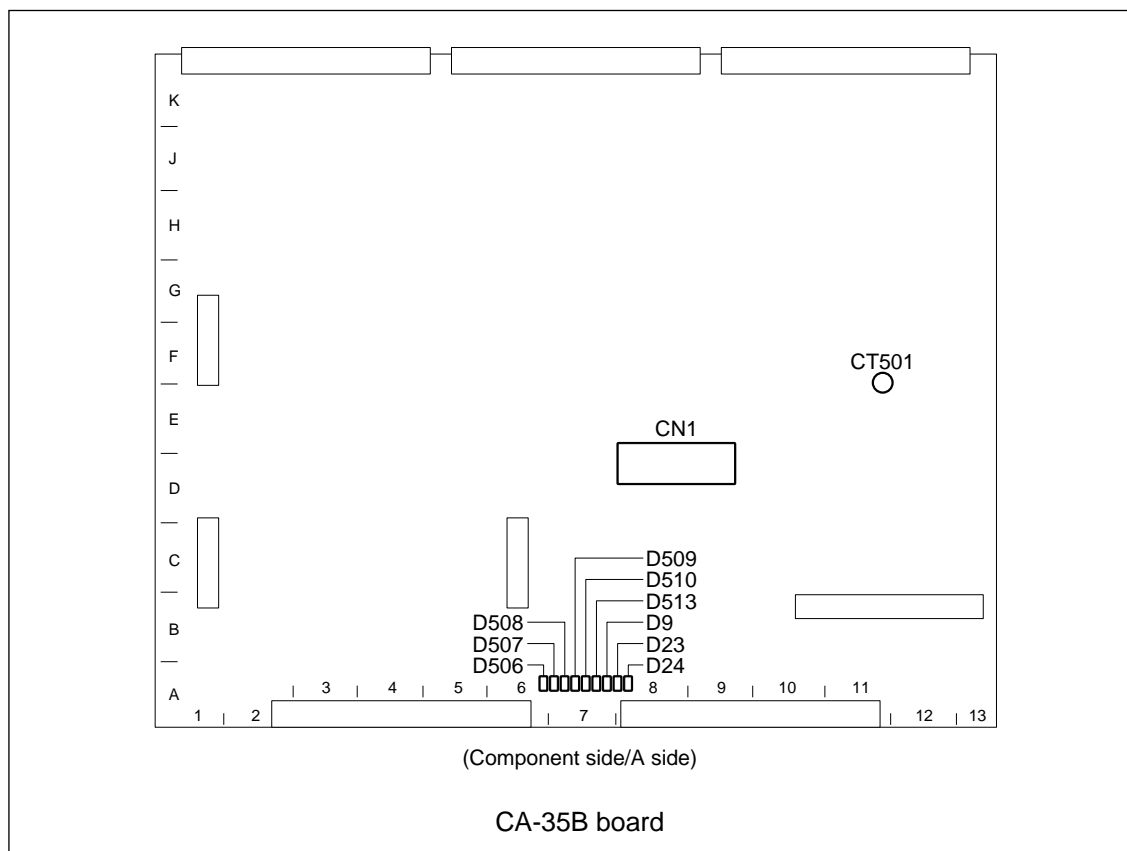
5-1. Switch Settings on Boards and LEDs Description

Note

The addresses on the boards are shown by () marks.

5-1-1. DVS-7200A

1. CA-35B Board



CN1 (E8) : FRAME MEMORY BOARD connector

This connector is reserved for future system expansion.

CT501 (F11) : BURST LEVEL adjustment

This potentiometer is used to adjust for the BURST level of the REF OUT.

Not use. This adjustment is finished in the factory.

D506 (Green color) (A6) : REF IN

This LED is displayed that the REF INPUT terminal receives the reference signal or not.

When the REF INPUT terminal receives the reference signal, this LED lights.

D507 (Green color) (A7) : REF OUT BB ON

This LED is displayed that the type of the signal is provided from the REF OUTPUT terminal.

Light; The 525 line black burst signal is provided from the REF OUTPUT terminal.

Light off; The sync signal is provided from the REF OUTPUT terminal.

D508 (Yellow color) (A7) : D1/D2 lamp

This LED is displayed that the SYSTEM is selected into the D1 or D2 format. This LED lights that the SYSTEM is selected into the D1 format.

D509 (Yellow color) (A7) : 625/525

This LED is displayed that the SYSTEM is selected into the 525 or 625 line mode. This LED lights that the SYSTEM is selected into the 625 line mode.

D510 (Red color) (A7) : REF ERR

This LED is displayed that the status of the reference signals are provided to the REF INPUTs terminals. When the REF INPUTs terminals are not received the reference signals or the received reference signals are abnormal, this LED lights.

In combination with the REF ERR and REF IN, this LED can check that the status of the reference input signals.

REF ERR (D510)	REF IN (D506)	Light	Light off
Light		The reference signal is abnormal.	The reference signal is not provided.
Light off		The normal reference signal is provide.	—

D513 (Green color) (A7) : SCH

This LED is displayed that the SCH phase of the black burst signals are provided to the REF INPUTS signals. When the SCH phase is normal, this LED lights.

D9 (Green color) (A7) : -5 V

This LED is displayed the status of the -5 V source for the CA-35B board.

Light ; Normal status.

Light off ; The power does not provide to the CA-35B board.

D23 (Yellow color) (A7) : +5 V

This LED is displayed the status of the +5 V source for the CA-35B board.

Light ; Normal status.

Light off ; The power does not provide to the CA-35B board.

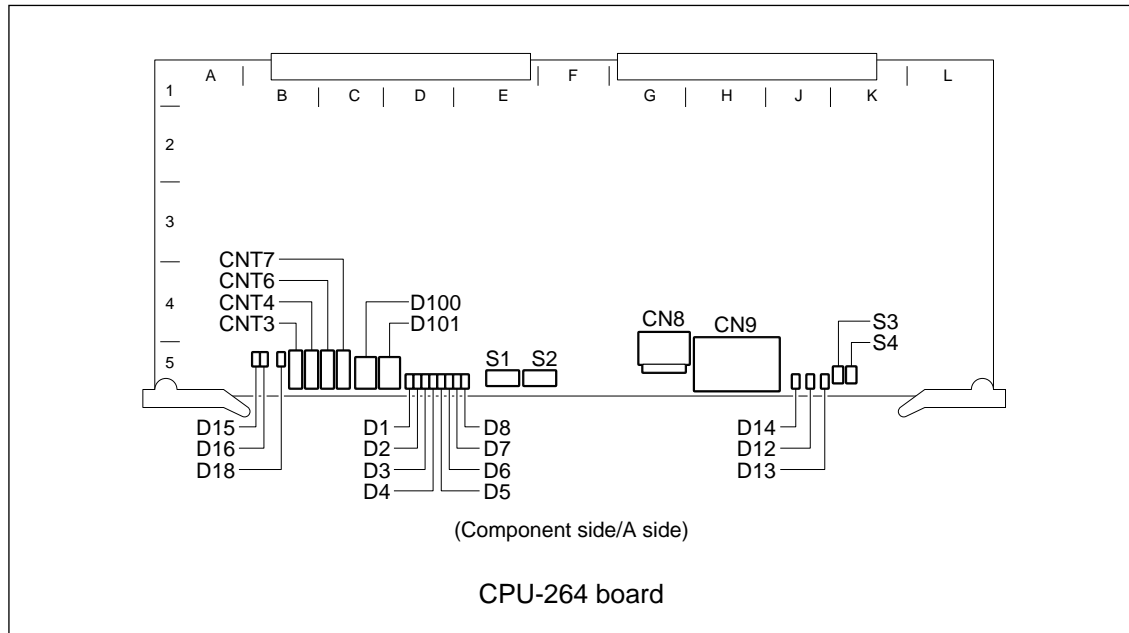
D24 (Yellow color) (A8) : +3 V

This LED is displayed the status of the +3 V source for the CA-35B board.

Light ; Normal status.

Light off ; The power does not provide to the CA-35B board.

2. CPU-264 Board



CNT3 (B5) : +5 V TEST terminal

This terminal is used to measure the +5 V voltage.

When re-adjusting the voltage after installing the option board to the unit, this terminal is used.

CNT4 (B5) : +3 V TEST terminal

This terminal is used to measure the +3 V voltage.

When re-adjusting the voltage after installing the option board to the unit, this terminal is used.

CNT6 (C5) : -5 V TEST terminal

This terminal is used to measure the -5 V voltage.

When re-adjusting the voltage after installing the option board to the unit, this terminal is used.

CNT7 (C5) : GND TEST terminal

This terminal is the reference against the +5 V, +3 V and -5 V TEST terminals.

CN8 (G5) : LAN connector

This connector is used for the adjustment in the factory.

CN9 (H5) : TERMINAL connector

This connector complies with the RS-232C standard, and is connected to the control terminal for the adjustment in the factory and the maintenance.

D1 through D8 (Green colors) (D5/E5) : STATUS displays
These LEDs are used for the adjustment in the factory.

D15 (Yellow color) (B5) : +5 V

This LED is displayed the status of the +5 V source for all system.

Light ; Normal status.

Light off ; The power does not provide to the CPU-264 board or the fuse on the CPU-264 or CA-35B board blows.

D16 (Yellow color) (B5) : +3 V

This LED is displayed the status of the +3 V source for all system.

Light ; Normal status.

Light off ; The power does not provide to the CPU-264 board or the fuse on the CPU-264 or CA-35B board blows.

D18 (Green color) (B5) : -5 V

This LED is displayed the status of the -5 V source for all system.

Light ; Normal status.

Light off ; The power does not provide to the CPU-264 board or the fuse on the CPU-264 or CA-35B board blows.

D14 (Yellow color) (J5) : VD

When the VD signal provides at regular intervals from the CA-35B board and is normal operated, this LED lights.

D12 (Green color) (J5) : RUN

When the CPU is normal operated, this LED lights.

D13 (Red color) (J5) : FAIL

When the CPU is stopped by some source, this LED lights.

S3 (K5) : ABORT switch

This switch is used when the unit starts up in the factory settings (except for the D1/D2 format and the RESUME mode).

The unit is operated the same as the clear command of the SET UP menu.

S4 (K5) : RESET switch

This switch is used to forcefully restart the SYSTEM by the hardware.

The unit is operated the same as the operation when turning the POWER ON.

The resume function is not operated.

S1 and S2 (E5) and (F5) : DBG switch

This switch is a 8-pin dip switch and is used to adjust in the factory.

Settings under normal status : All OFF

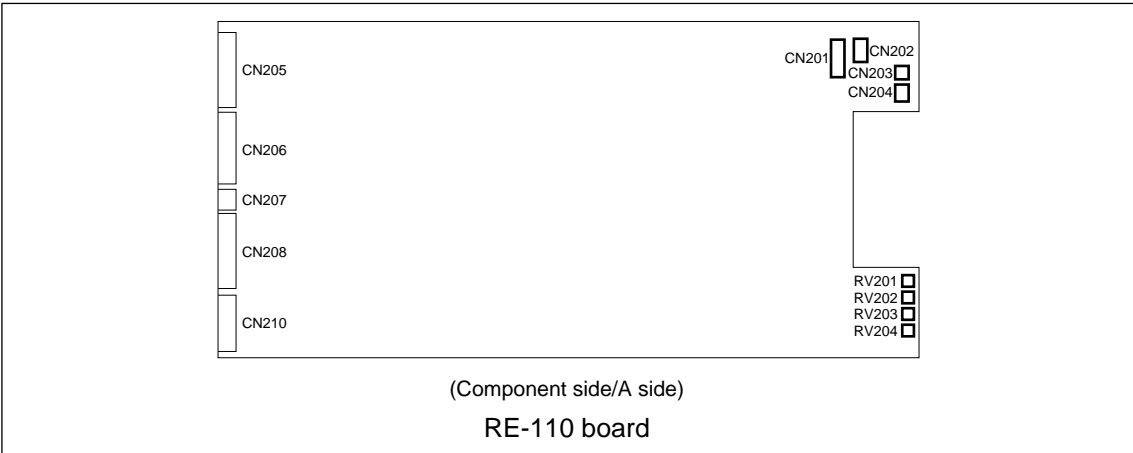
D100 and D101 (C5) and (D5) : 7 SEGMENT displays

Light off; The power is turned ON.

Display the figure; The application starts the operation.

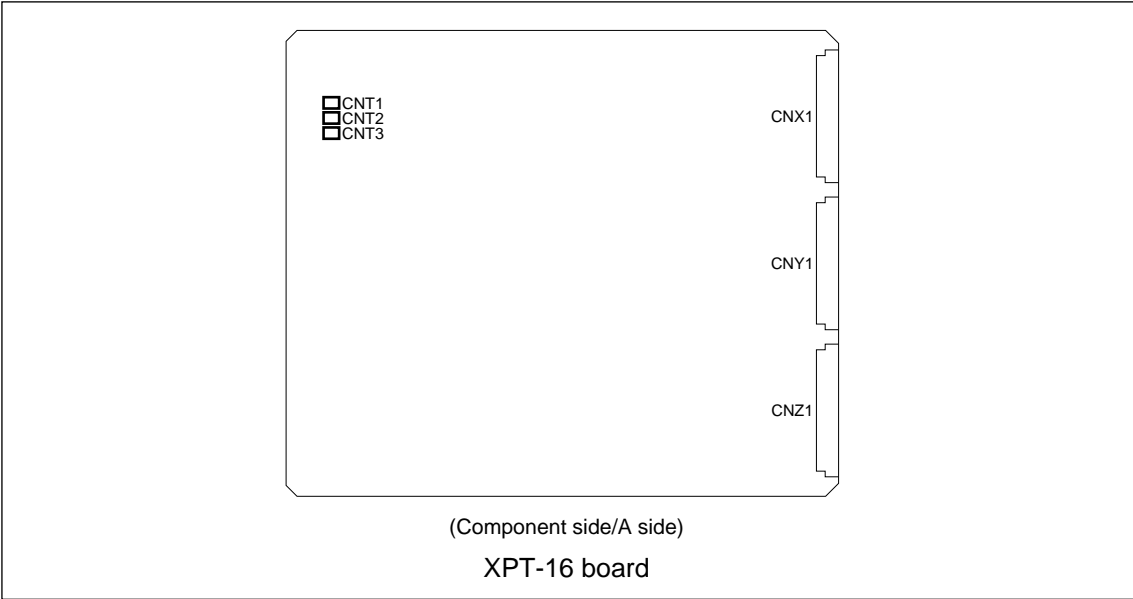
These figures differ according to the operation mode.

3. RE-110 Board (BKDS-7690)



- RV201 (K4) : +5 V (A) adjustment
- RV202 (K4) : +5 V (B) adjustment
- RV203 (K5) : +3 V adjustment
- RV204 (K5) : -5 V adjustment

4. XPT-16 Board



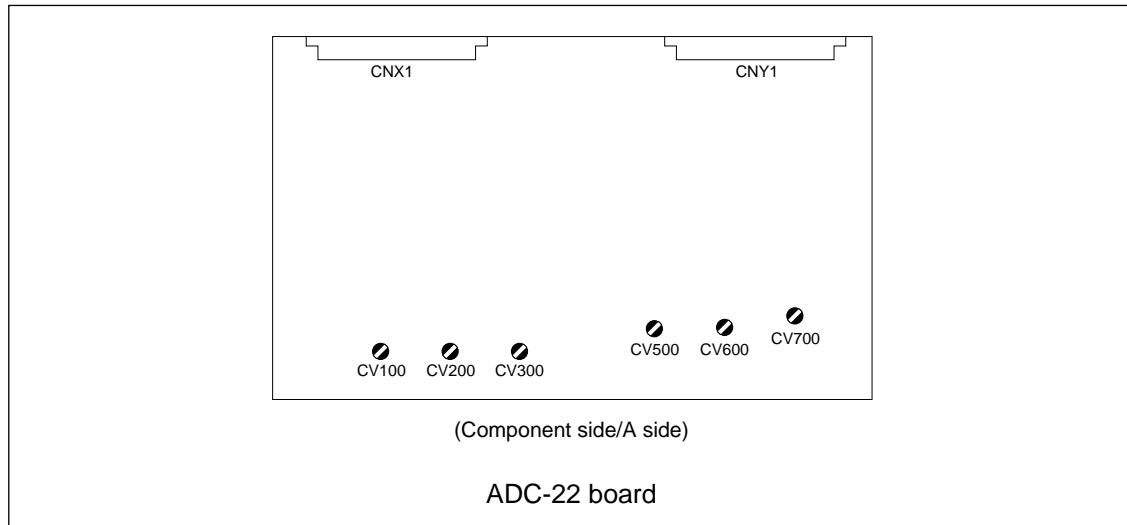
CNT1 (C1) : +5 V TEST terminal
This terminal is used for the measurement of the +5 V voltage.
When re-adjusting the voltage after installing the option board to the unit, this terminal is used.

CNT2 (C1) : +3 V TEST terminal
This terminal is used for the measurement of the +3 V voltage.
When re-adjusting the voltage after installing the option board to the unit, the terminal on the CPU-264 board is used.

CNT3 (D1) : GND TEST terminal
This terminal is used for the reference against the +5 V and +3 V TEST terminals.

5-1-2. BKDS-7133

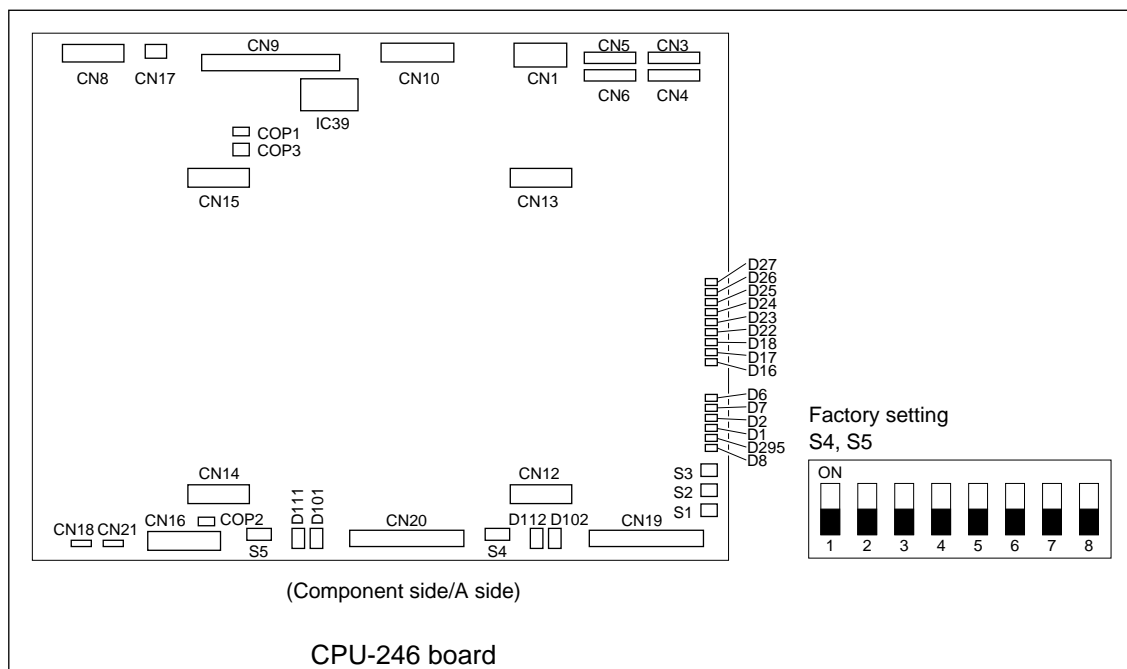
1. ADC-22 Board



- CV100 (D2)** : CH1 G/Y frequency response adjustment
- CV200 (F2)** : CH1 B/B-Y frequency response adjustment
- CV300 (H2)** : CH1 R/R-Y frequency response adjustment
- CV500 (K3)** : CH2 G/Y frequency response adjustment
- CV600 (M3)** : CH2 B/B-Y frequency response adjustment
- CV700 (P3)** : CH2 R/R-Y frequency response adjustment

5-1-3. BKDS-7015

1. CPU-246 Board



This is used only for service and is opened under normal status.

COP1 (E3) :

This is used to select the mode corresponding to the synchronized signal that is connected to the SWITCHER on the rear panel. Normally, opened under.

COP3 (E3) :

This is used to select the RS-232C signal that is connected to the TERMINAL 2 on the rear panel.

Selection under normal status ; NOR side

Selection in the factory ; DBG side

S1 (R10) : RESET switch

This switch is used to forcibly restart the SYSTEM by the hardware. The unit is operated the same as the operation when turning the POWER ON.

S2 (R19) : ABORT switch

This switch is used for the adjustment in the factory.

S3 (R10) : SUB ABORT switch

This switch is used for the adjustment in the factory. If pressing this switch after selecting the S5 switch on the CPU-246 board to the SUB CPU flash memory access protection mode, clean the content of the flash memory for stored-program.

S4 (L11) : MAIN CPU switch

This switch is used to select the operation of MAIN CPU. After changing the selection, to start the operation re-press the S1 of the RESET switch on the CPU-246 board or re-turn the power on.

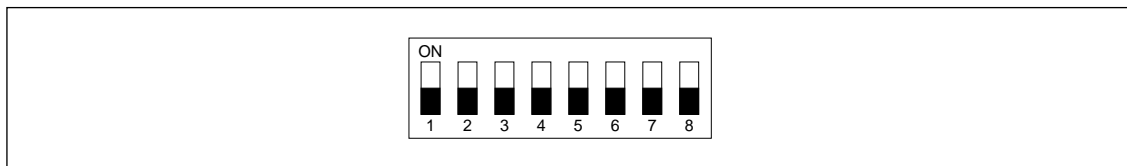
Setting : All OFFs.

Note

The addresses of the knobs are shown by ■ marks.

(1) Selection 1 under normal status

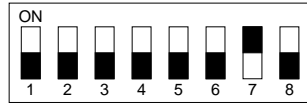
When starting up the system, the diagnostic program does not run. Just after turning the power on, the system starts up.



(2) Selection 2 under normal status.

When starting up the system, diagnostic program runs. After turning the power on, it is necessary for about ten seconds until the system starts up.

Under normal status, all settings are OFFs.



S5 (N1) : SUB CPU switch

This switch is used to select the operation mode of SUB CPU.

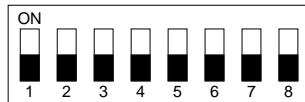
Selections in the factory : All OFF

Note

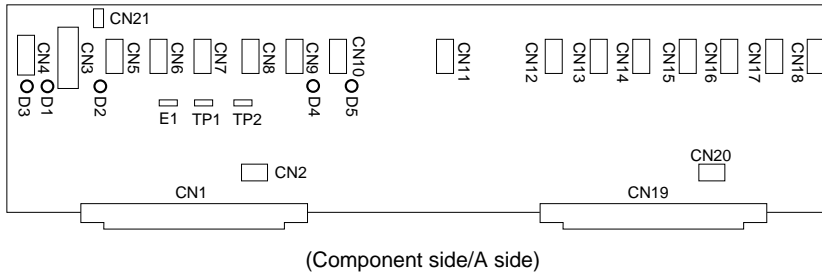
The addresses of the knobs are shown by ■ marks.

(1) Selections when operating under normal status

The selections for normal operation.



2. CN-1150 Board



CN-1150 board

D1 (Yellow color) (A1) :

When the +12 V source provides to the CN3 on the CN-1150 board, this LED lights.

D2 (Green color) (B1) :

When the +5 V source provides to the CN3 on the CN-1150 board, this LED lights.

D3 (Yellow color) (A1) :

When the +12 V source provides to the CN4 on the CN-1150 board, this LED lights.

D4 (Yellow color) (D1) :

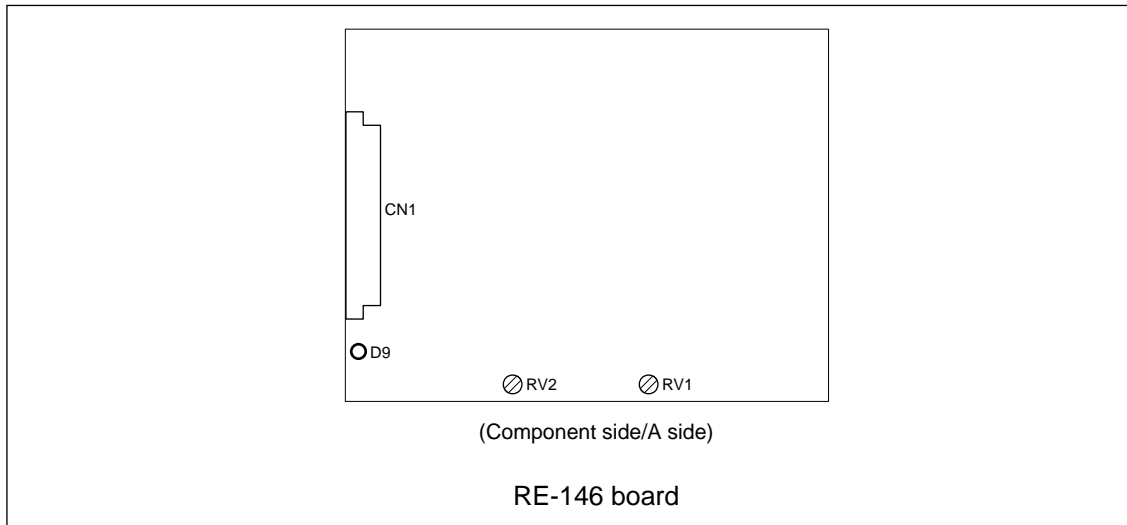
When the +12 V source provides to the CN5 through CN18 on the CN-1150 board, this LED lights.

D5 (Green color) (D1) :

When the +5 V source provides to the CN5 through CN18 on the CN-1150 board, this LED lights.

5-1-4. BKDS-7091

1. RE-146 Board



D9 (Green color) (D4) :

When the power is normal operated, this LED lights.

When the following troubles come up, this LED light off.

In the cases that one power unit is used.

1. When the power switch in the panel is turned off.
2. When the fun stops in the power unit.
3. When the CP2 or CP3 in the power unit is not normal operated.

In the cases that two power units are used.

1. When the one power switch in the panel is turned off.
2. When the one fun stops in the power unit.
3. When the CP1, CP2 or CP3 in the power unit is not normal operated.
4. When the voltage of the two power is correctly adjusted.
(The diode on the power unit that is low-level lights off.)

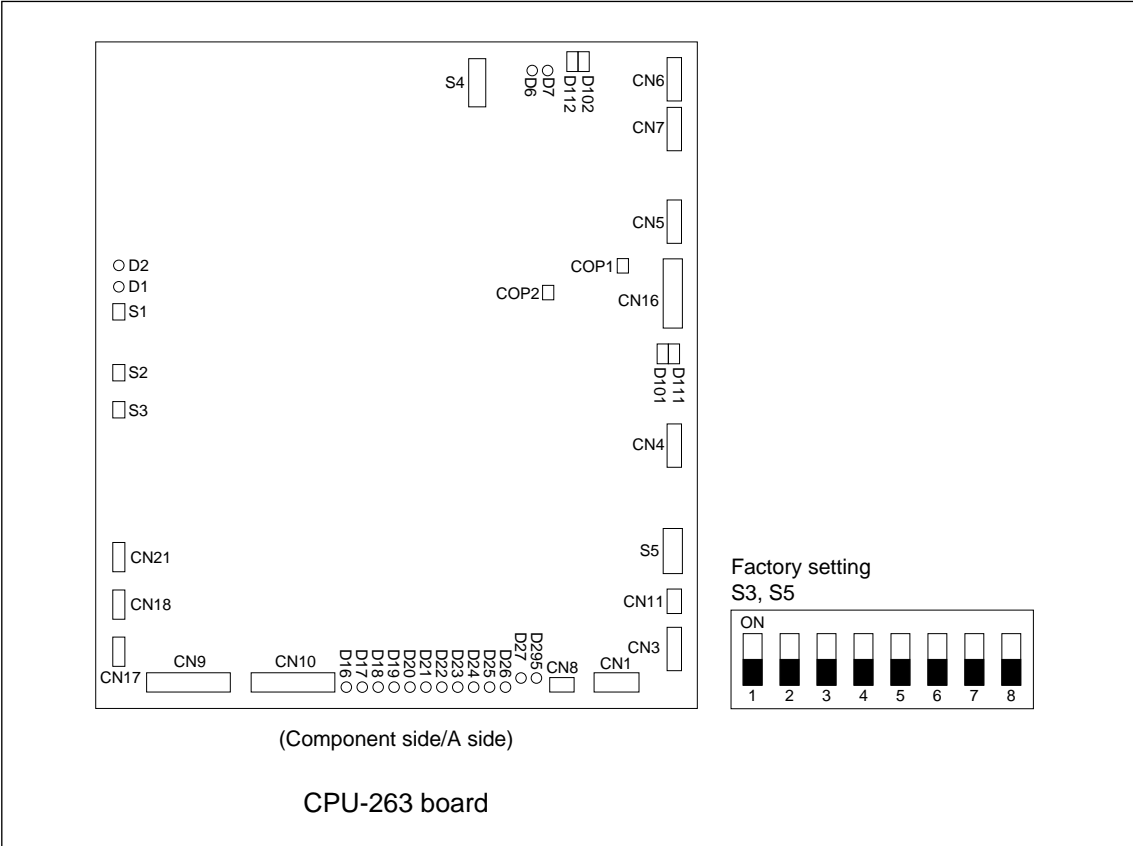
In the steps 1 through 3, the diode on the power unit that is not normal operated lights off.

RV1 (D2) : +12 V voltage adjustment

RV2 (D3) : +5 V voltage adjustment

5-1-5. BKDS-7025/7026

1. CPU-263 Board



COP1 (F2) :

This is used to select the mode corresponding to the synchronized signal that is connected to the SWITCHER on the rear panel. Normally, opened under.

COP2 (G3) :

Normally, short-circuit the “NOR” side.

S1 (G12) : RESET switch

This switch is used to forcibly restart the SYSTEM by the hardware. The unit is operated the same as the operation when turning the POWER ON.

S2 (H12) : ABORT switch

This switch is used for the adjustment in the factory.

S3 (J12) : SUB ABORT switch

This switch is used for the adjustment in the factory. If pressing this switch after selecting the S5 switch on the CPU-263 board to the SUB CPU flash memory access protection mode, clean the content of the flash memory for stored-program.

S4 (B5) : MAIN CPU switch

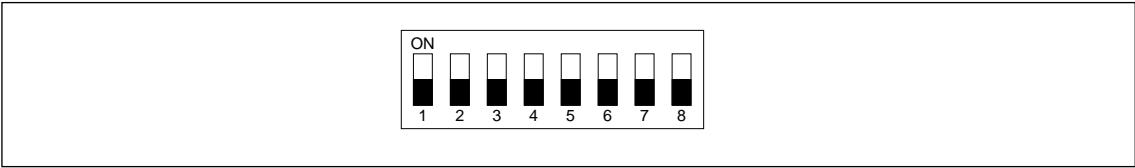
This switch is used to select the operation of MAIN CPU. After changing the selection, to start the operation re-press the S1 of the RESET switch on the CPU-263 board or re-turn the power on.
Setting : All OFFs.

Note

The addresses of the knobs are shown by ■ marks.

(1) Selection 1 under normal status

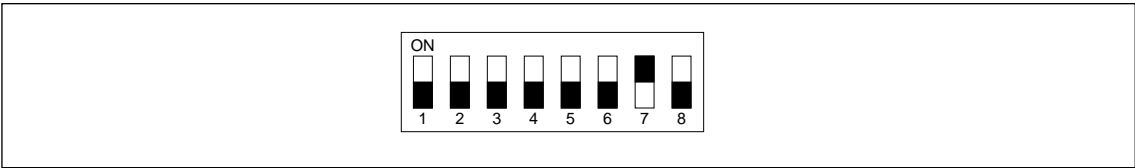
When starting up the system, the diagnostic program does not run. Just after turning the power on, the system starts up.



(2) Selection 2 under normal status.

When starting up the system, diagnostic program runs. After turning the power on, it is necessary for about ten seconds until the system starts up.

Under normal status, all settings are OFFs.



S5 (M1) : SUB CPU switch

This switch is used to select the operation mode of SUB CPU.

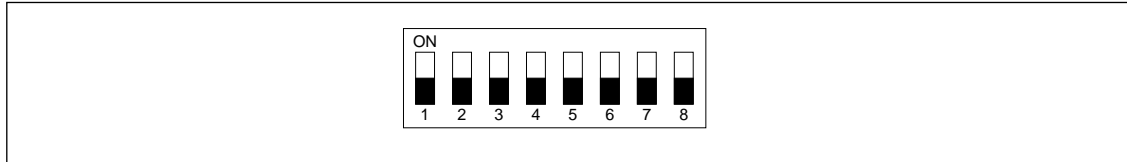
Selections in the factory : All OFF

Note

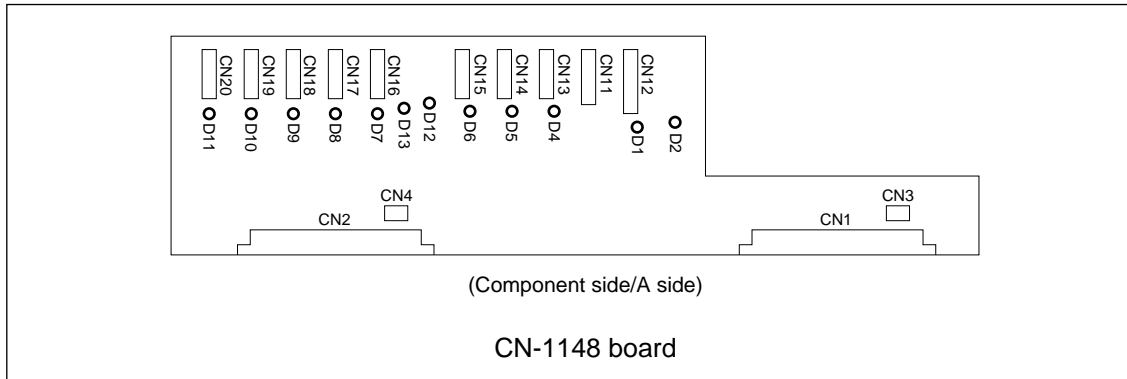
The addresses of the knobs are shown by ■ marks.

(1) Selections when operating under normal status

The selections for normal operation.



2. CN-1148 Board



D1 (Green color) (F2) :

When the +5 V source provides to the CN11 on the CN-1148 board, this LED lights.

D2 (Yellow color) (F2) :

When the +12 V source provides to the CN12 on the CN-1148 board, this LED lights.

D4 (Red color) (F2) :

When the +3 V source provides to the CN13 on the CN-1148 board, this LED lights.

D5 (Red color) (D2) :

When the +3 V source provides to the CN14 on the CN-1148 board, this LED lights.

D6 (Red color) (D2) :

When the +3 V source provides to the CN15 on the CN-1148 board, this LED lights.

D7 (Red color) (C2) :

When the +3 V source provides to the CN16 on the CN-1148 board, this LED lights.

D8 (Red color) (D2) :
When the +3 V source provides to the CN17 on the CN-1148 board, this LED lights.

D9 (Red color) (B2) :
When the +3 V source provides to the CN18 on the CN-1148 board, this LED lights.

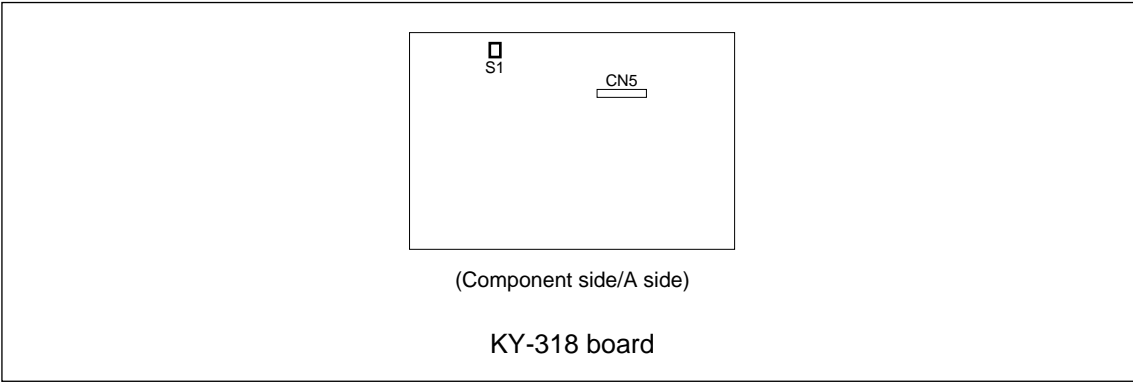
D10 (Red color) (A2) :
When the +3 V source provides to the CN19 on the CN-1148 board, this LED lights.

D11 (Red color) (A2) :
When the +3 V source provides to the CN20 on the CN-1148 board, this LED lights.

D12 (Yellow color) (C1) :
When the +12 V source provides to the CN13 through CN20 on the CN-1148 board, this LED lights.

D13 (Green color) (C1) :
When the +5 V source provides to the CN13 through CN20 on the CN-1148 board, this LED lights.

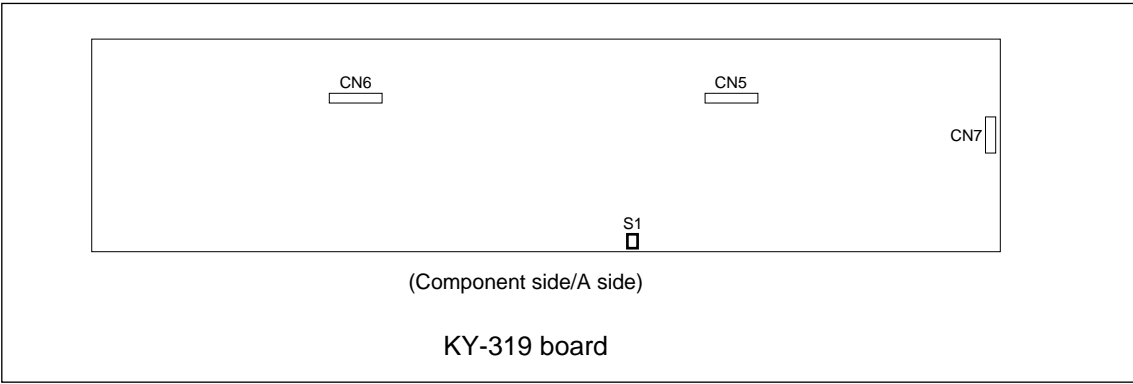
3. KY-318 Board



S1 (C1) : Board ID Setting Switch
Set this switch as follows depending upon the M/E row position in which the KY-318 board is installed.
Normally, use the default settings when shipped from the factory.
Factory settings :

Row position	Ch.1	Ch.2
M/E-1	OFF	ON
M/E-2	ON	OFF
P/P	OFF	OFF

4. KY-319 Board



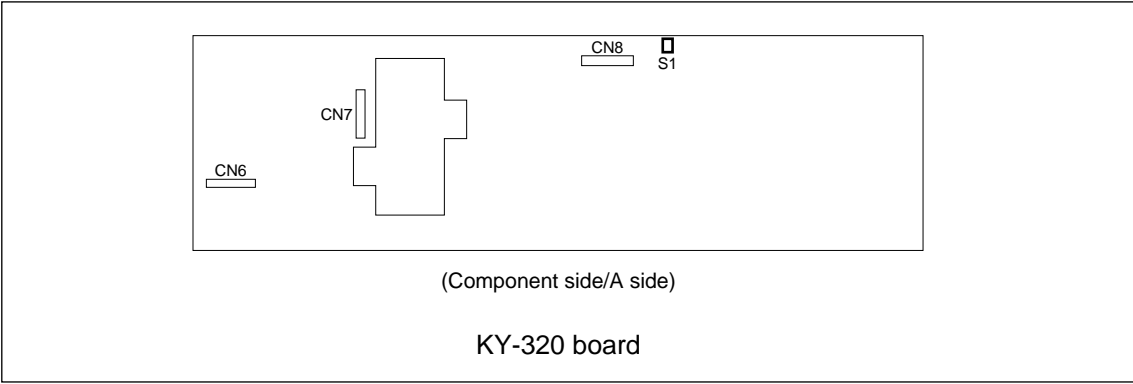
S1 (R4) : Board ID Setting Switch

Set this switch as follows depending upon the M/E row position in which the KY-319 board is installed.
Normaly, use the default settings when shipped from the factory.

Factory settings :

Row position	Ch.1	Ch.2
M/E-1	OFF	ON
M/E-2	ON	OFF
P/P	OFF	OFF

5. KY-320 Board



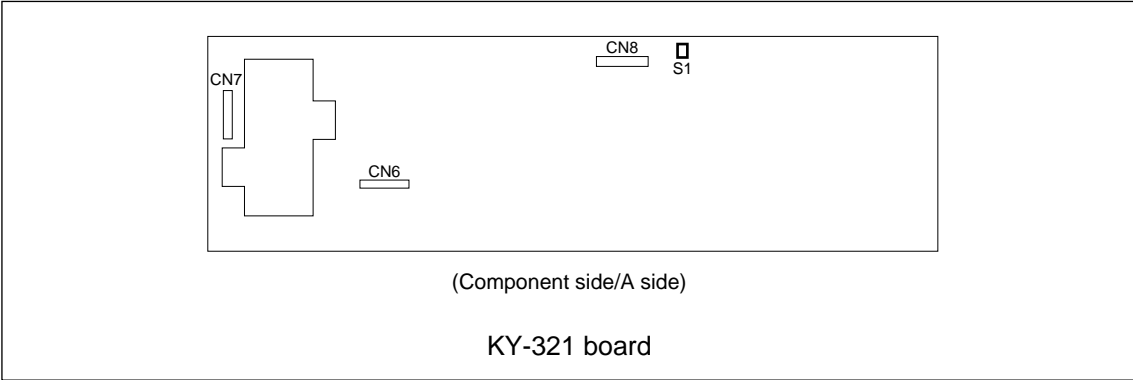
S1 (N1) : Board ID Setting Switch

Set this switch as follows depending upon the M/E row position in which the KY-320 board is installed.
Normaly, use the default settings when shipped from the factory.

Factory settings :

Row position	Ch.1	Ch.2
M/E-1	OFF	ON
M/E-2	ON	OFF

6. KY-321 Board (BKDS-7025)



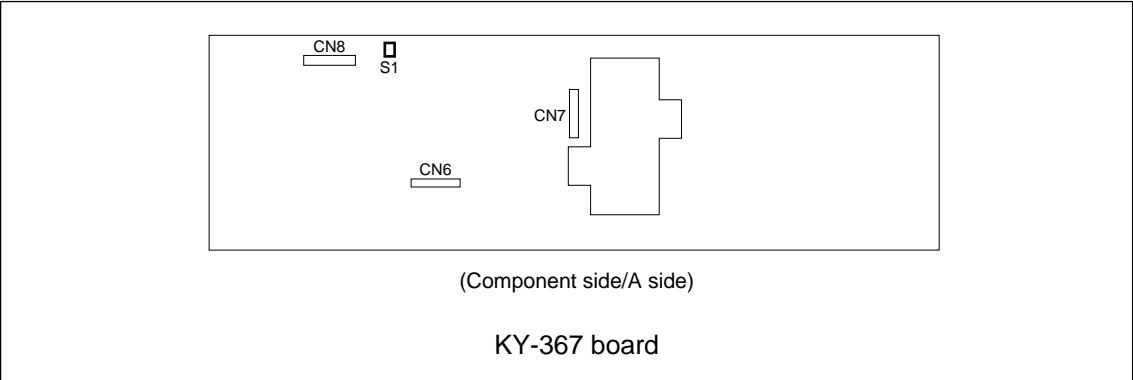
S1 (N1) : Board ID Setting Switch

Set this switch as follows depending upon the M/E row position in which the KY-321 board is installed.
Normaly, use the default settings when shipped from the factory.

Factory settings :

Row position	Ch.1	Ch.2
M/E-1	OFF	ON
M/E-2	ON	OFF

7. KY-367 Board (BKDS-7026)



S1 (F1) : Board ID Setting Switch

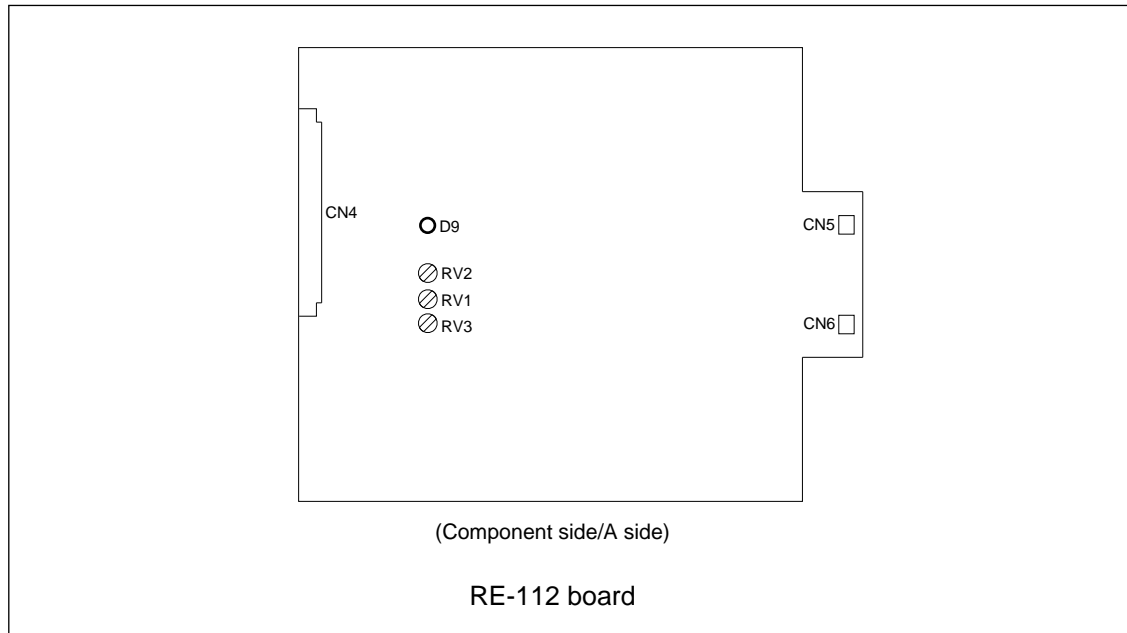
Set this switch as follows depending upon the M/E row position in which the KY-367 board is installed.
Normaly, use the default settings when shipped from the factory.

Factory settings :

Row position	Ch.1	Ch.2
M/E-1	OFF	ON
M/E-2	ON	OFF

5-1-6. BKDS-7090

1. RE-112 Board



D9 (Green color) (C4) :

When the power is normal operated, this LED lights.

When the following troubles come up, this LED light off.

In the cases that one power unit is used.

1. When the power switch in the panel is turned off.
2. When the fun stops in the power unit.
3. When the CP1 or CP2 in the power unit is not normal operated.

In the cases that two power units are used.

1. When the one power switch in the panel is turned off.
2. When the one fun stops in the power unit.
3. When the CP1, CP2, CP3 or CP4 in the power unit is not normal operated.
4. When the voltage of the two power is correctly adjusted.
(The diode on the power unit that is low-level lights off.)

In the steps 1 through 3, the diode on the power unit that is not normal operated lights off.

RV1 (C5) : +5 V voltage adjustment

RV2 (C4) : +12 V voltage adjustment

RV3 (C5) : +3 V voltage adjustment

5-2. Adjustment of Secondary Power Supply Voltage

5-2-1. DVS-7200A

DVS-7200A has the power sources of +5 V (A), +5 V(B), +3 V, and −5 V. For the voltage measurement of +5 V (A), +3 V, and −5 V and on the CPU-264 board and +5 V (B) or XPT-16 board the test terminals are provided that can be connected to the probe of a digital voltmeter.

After installation of all required plug-in boards is completed, confirm the power supply voltage in the unit as described below.

Note

Confirm that the power unit is properly inserted and secured by the four screws.

When only standard power unit is installed, refer to the following procedures for power unit A.

This standard power unit is named as power unit A

(Procedures for Power Unit A)

- (1) Detach the front panel of DVS-7200A. (Refer to “4-3-1 Removing and Installing of Front Panel”)
- (2) Turn on the power switch of the power unit A.
- (3) Confirm that all indicators (D15, D16 and D18) on the CPU-264 board light.
- (4) Connect the digital voltmeter between test terminals on the CPU-264 and the XPT-16 boards and confirm that the voltage value of each test connector meet the specification shown in the next page. If the specification does not meet, adjust the voltage by the adjustment potentiometers of the power unit A.

Note

When connecting the probes of the digital voltmeter between test terminals, take care to avoid contacting the probes with the GND areas of the shield plates.

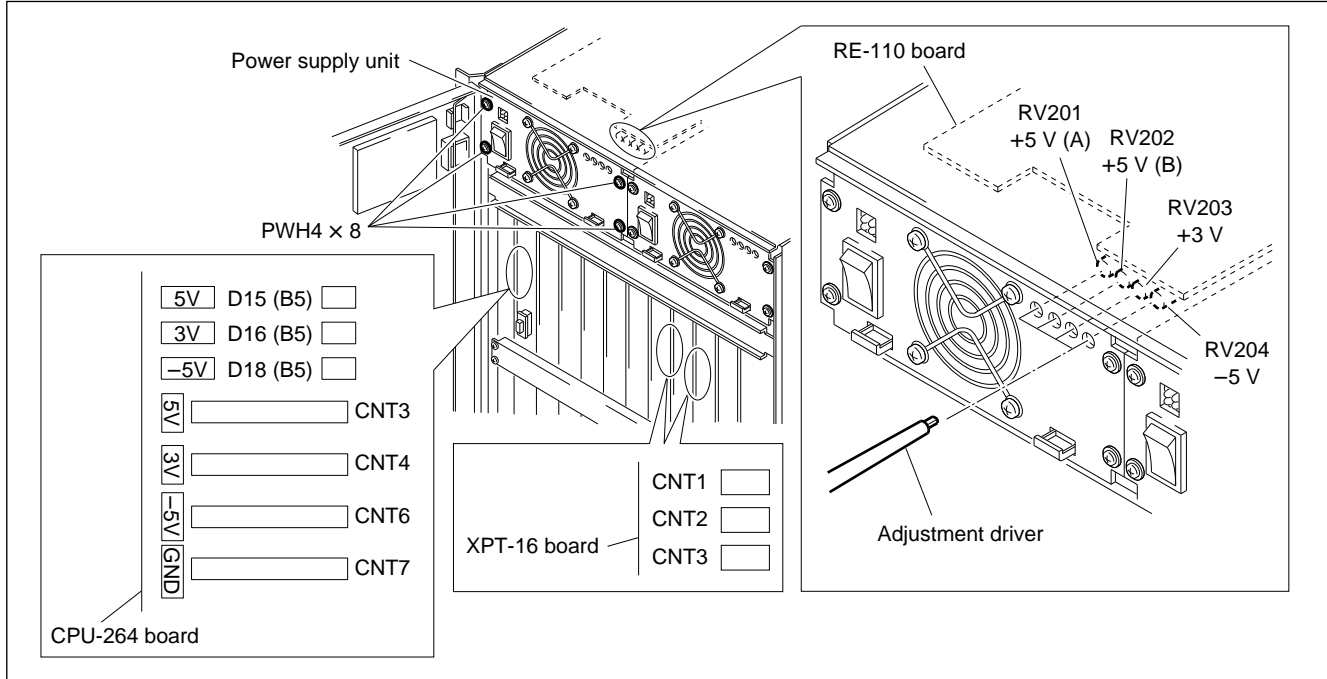
When the power unit BKDS-7690 is installed, refer to the following procedures for power unit B.

The power unit of BKDS-7690 is named as power unit B.

(Procedures for Power Unit B)

- (1) Turn off the power switch of the power unit B.
- (2) Carry out all steps of “procedures for power unit A”.
- (3) Turn off the power switch of the power unit A and turn on the power switch of the power unit B.
- (4) Confirm that all indicators (D15, D16 and D18) on the CPU-264 board light.

- (5) Connect the digital voltmeter between test terminals on the CPU-264 and the XPT-16 boards and confirm that the voltage value of each test connector meet the specification shown in the table below. If the specification does not meet, adjust the voltage by the adjustment potentiometers of the power unit B.
- (6) Turn on the power switches of the power units A and B.
- (7) Confirm that the indicators of the power units A and B light. If an indicator of both does not light, re-carry out from the step (1) of “procedures for power unit B”.



Power unit	Voltage	Specifications	Test connector	Adjustment potentiometer
A	+5 V (A)	$+5.05 \pm 0.02$ V	CPU-264 board CNT3 (+5 V) \leftrightarrow CNT7 (GND)	RE-110 board ●RV201 (Power unit A)
	+5 V(B)	$+5.05 \pm 0.02$ V	XPT-16 board CNT1 (+5 V) \leftrightarrow CNT3 (GND)	RE-110 board ●RV202 (Power unit A)
	+3 V	$+3.35 \pm 0.02$ V	CPU-264 board CNT4 (+3 V) \leftrightarrow CNT7 (GND)	RE-110 board ●RV203 (Power unit A)
	-5 V	-5.05 ^{+0.00 V (*1)} -0.02 V	CPU-264 board CNT6 (-5 V) \leftrightarrow CNT7 (GND)	RE-110 board ●RV204 (Power unit A)
B	+5 V(A)	$+5.05 \pm 0.02$ V	CPU-264 board CNT3 (+5 V) \leftrightarrow CNT7 (GND)	RE-110 board ●RV201 (Power unit B)
	+5 V(B)	$+5.05 \pm 0.02$ V	XPT-16 board CNT1 (+5 V) \leftrightarrow CNT3 (GND)	RE-110 board ●RV202 (Power unit B)
	+3 V	$+3.35 \pm 0.02$ V	CPU-264 board CNT4 (+3 V) \leftrightarrow CNT7 (GND)	RE-110 board ●RV203 (Power unit B)
	-5 V	-5.03 ^{+0.02 V (*2)} -0.00 V	CPU-264 board CNT6 (-5 V) \leftrightarrow CNT7 (GND)	RE-110 board ●RV204 (Power unit B)

(*1) For the power unit A the center value of the -5 V is -5.05 V.

(*2) For the power unit B the center value of the -5 V is -5.03 V.

5-2-2. BKDS-7015

The control panels BKDS-7015 have the power sources of +5 V and +12 V.

For the voltage measurement of +5 V and +12 V, on the CN-1150 board the test terminals are provided that can be connected to the probe of a digital voltmeter.

After installation of all required options is completed, confirm the power supply voltage in the unit as described below.

Note

Confirm that the power unit is properly inserted and secured by the two screws.

When only standard power unit is installed, refer to the following procedures for power unit A.

The standard power unit is named as power unit A.

(Procedures for Power Unit A)

- (1) Open the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)
- (2) Turn on the power switch A of the power unit A.
- (3) Confirm that the indicators (D1 through D5) on the CN-1150 board light.
- (4) Connect the digital voltmeter between test connectors on the CN-1150 board and confirm that the voltage value meets the specification shown in the next page.
If the specification does not meet, adjust the voltage by the adjustment potentiometer of the power unit A.

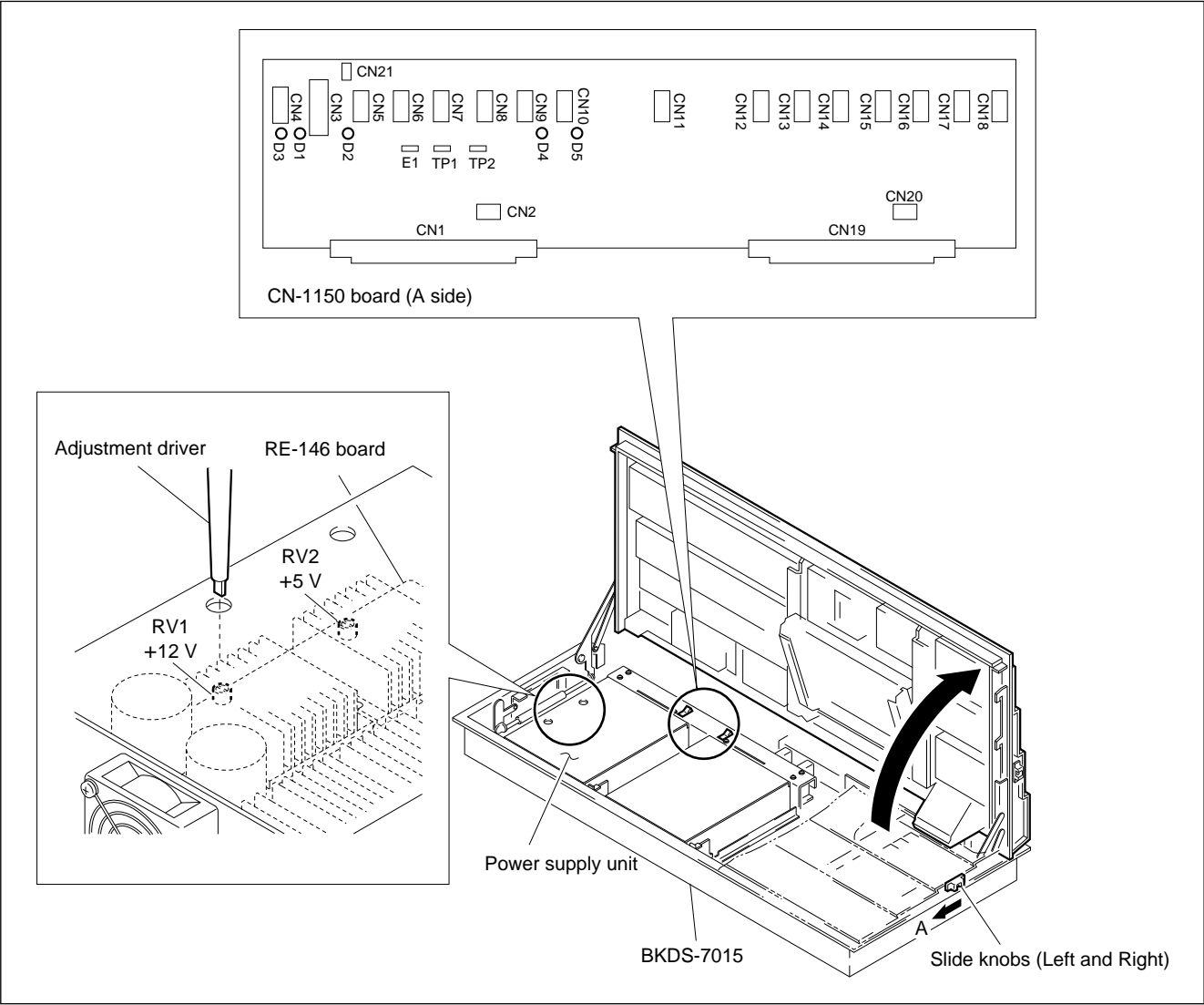
When the power unit of BKDS-7091 is installed, refer to the following procedures for power unit B.

This power unit of BKDS-7091 is named as power unit B.

(Procedures for Power Unit B)

- (1) Turn OFF the power switch B of the power unit B.
- (2) Carry out all steps of “procedures for power unit A”.
- (3) Turn OFF the power switch A of the power unit A and turn ON the of the power switch B of the power unit B.
- (4) Confirm that the indicators (D1 through D5) on the CN-1150 board lights.

- (5) Connect the digital voltmeter between test terminals on the CN-1150 board and confirm that the voltage value meets the specification shown in the table below.
If the specification does not meet, adjust the voltage by the adjustment potentiometer of the power unit B.
- (6) Turn ON the power switches A and B of the power units A and B.
- (7) Confirm that the indicators of the power units A and B light. If an indicator of both does not light, re-carry out from the step (1) of “procedures for power unit B”.



Voltage	Specifications	Test connector	Adjustment potentiometer
+5 V	$+5.10 \pm 0.02$ V	CN-1150 board TP2 (+5 V) ↔ E1 (GND)	RE-146 board ●RV2
+12 V	$+12.24 \pm 0.02$ V	CN-1150 board TP1 (+12 V) ↔ E1 (GND)	RE-146 board ●RV1

5-2-3. BKDS-7025/7026

The control panels BKDS-7025/7026 have the power sources of +5 V, +3 V and +12 V.

For the voltage measurement of +5 V, +3 V and +12 V, on the CN-1148 board the test terminals are provided that can be connected to the probe of a digital voltmeter.

After installation of all required options is completed, confirm the power supply voltage in the unit as described below.

Note

Confirm that the power unit is properly inserted and secured by the two screws.

When only standard power unit is installed, refer to the following procedures for power unit A.

The standard power unit is named as power unit A.

(Procedures for Power Unit A)

- (1) Open the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)
- (2) Turn on the power switch A of the power unit A.
- (3) Confirm that the indicators (D1, D2 and D4 through D13) on the CN-1148 board light.
- (4) Connect the digital voltmeter between test connectors on the CN-1148 board and confirm that the voltage value meets the specification shown in the table below.

If the specification does not meet, adjust the voltage by the adjustment potentiometer of the power unit A.

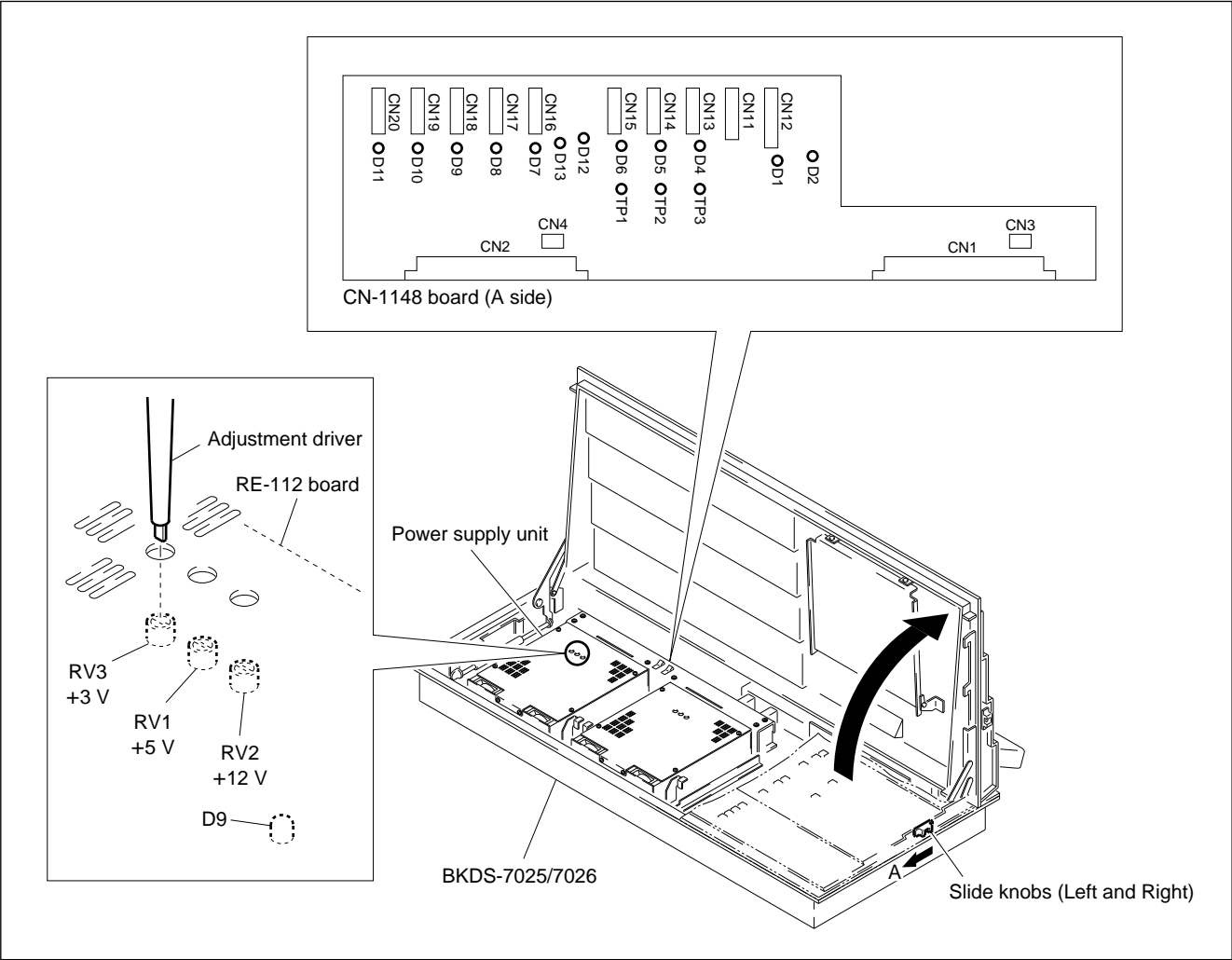
When the power unit of BKDS-7090 is installed, refer to the following procedures for power unit B.

This power unit of BKDS-7090 is named as power unit B.

(Procedures for Power Unit B)

- (1) Turn OFF the power switch B of the power unit B.
- (2) Carry out all steps of “procedures for power unit A”.
- (3) Turn OFF the power switch A of the power unit A and turn ON the of the power switch B of the power unit B.
- (4) Confirm that the indicators (D1, D2 and D4 through D13) on the CN-1148 board lights.

- (5) Connect the digital voltmeter between test terminals on the CN-1148 board and confirm that the voltage value meets the specification shown in the table below.
If the specification does not meet, adjust the voltage by the adjustment potentiometer of the power unit B.
- (6) Turn ON the power switches A and B of the power units A and B.
- (7) Confirm that the indicators of the power units A and B light. If an indicator of both does not light, re-carry out from the step (1) of “procedures for power unit B”.



Voltage	Specifications	Test connector	Adjustment potentiometer
+5 V	$+5.10 \pm 0.02 \text{ V}$	CN-1148 board TP1 (+5 V) ↔ E1 (GND)	RE-112 board ●RV1
+3 V	$+3.10 \pm 0.02 \text{ V}$	CN-1148 board TP3 (+3 V) ↔ E1 (GND)	RE-112 board ●RV3
+12 V	$+12.24 \pm 0.02 \text{ V}$	CN-1148 board TP2 (+12 V) ↔ E1 (GND)	RE-112 board ●RV2

5-3. Adjustment of Operation Power for Fader Lever

Without removing the fader from the panel, the operation power of the fader lever is possible to adjust.

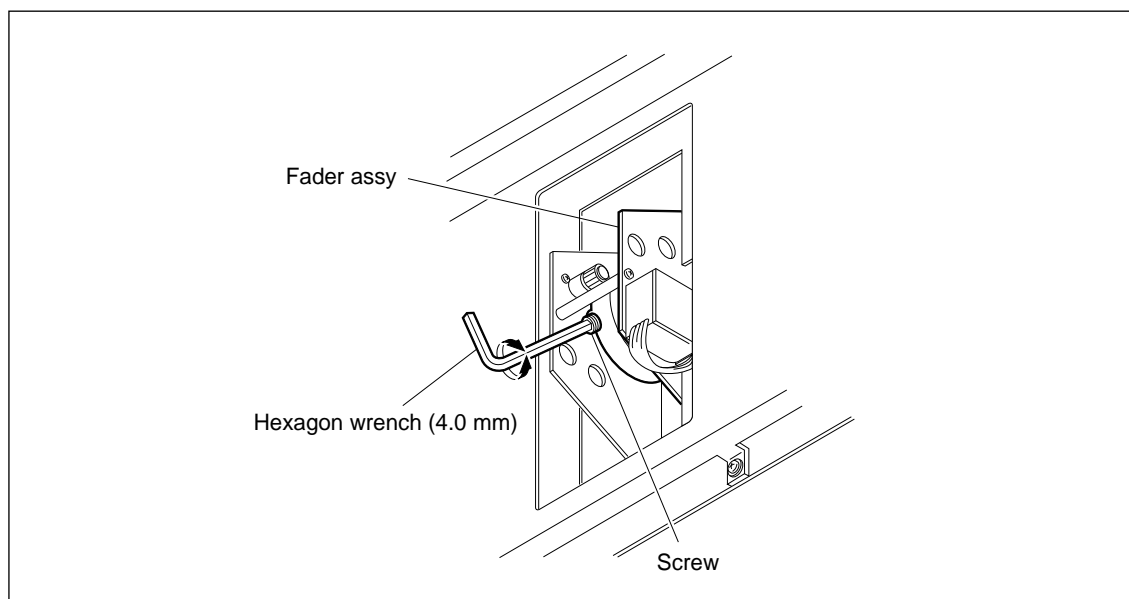
- (1) Open the panel. (Refer to “4-4-1. Opening and Closing of Panel”.)
- (2) When adjusting the fader lever (BKDS-7030) with installed to the adaptor box (BKDS-7075), remove the two screws and the AD panel. (Refer to “2. Adaptor Box” in the section 1-2-3 of the maintenance manual part 1.)

When adjusting the fader lever in the main panel, remove the CPU-246/263 board. (Refer to “5. CPU-246 Board” or “6. CPU-263 Board” in the section 1-2-5 of the maintenance manual part 1.)

- (3) Turn the screw by an L wrench (across 4.0 mm) and adjust the operation power.

⌚ : If turning the screw clockwise, the operation of the fader lever become slow.

⌚ : If turning the screw counterclockwise, the operation of the fader lever become fast.



Section 6

Initial Set-up of System

Before setting-up for DVS-7200A, the installation of operating program, the set-up required in the construction of the system and the saving of set-up data for DVS-7200A system are described.

6-1. Operation and Saving of Set-up Data

This section is described the operation and the saving of the set-up data in the system.
A set-up data exists in the four domains shown as follows.

1. RAM

This memory is the operating domain. The system operates using the set-up data on this memory. The set-up data is always changed on this memory.

When the resume function is selected to the OFF, by turning the power OFF or by resetting the system the set-up data on this memory is lost.

After turning the power ON or resetting the system, the set-up data in the Nonvolatile memory is recalled on this RAM.

When the resume function is selected to the ON, regardless of the turning the power OFF or resetting system, the system operates using the set-up data on this memory.

2. Nonvolatile Memory

This is a nonvolatile memory. If turning the power OFF, this memory can save the data. This memory is used as the saving domain of the back up data when the resume function is selected to the OFF.

3. ROM

This memory permanently saves the basic set-up data in the factory shipment. When the system is reset up or the nonvolatile memory is initialized, this memory is used.

If calling the contents, initialize the system in the set-up menu screen.

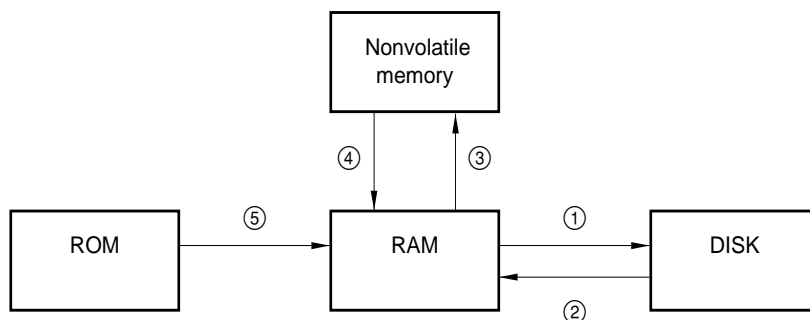
4. DISK

A disk is used to more permanently save the set-up data saved in the nonvolatile memory, to transfer the set-up data to another editing suite, or to keep the data for oneself by operator.

Note

The following data are saved the status that is displayed on the menu screen and are not changed by resetting or all-clearing the system.

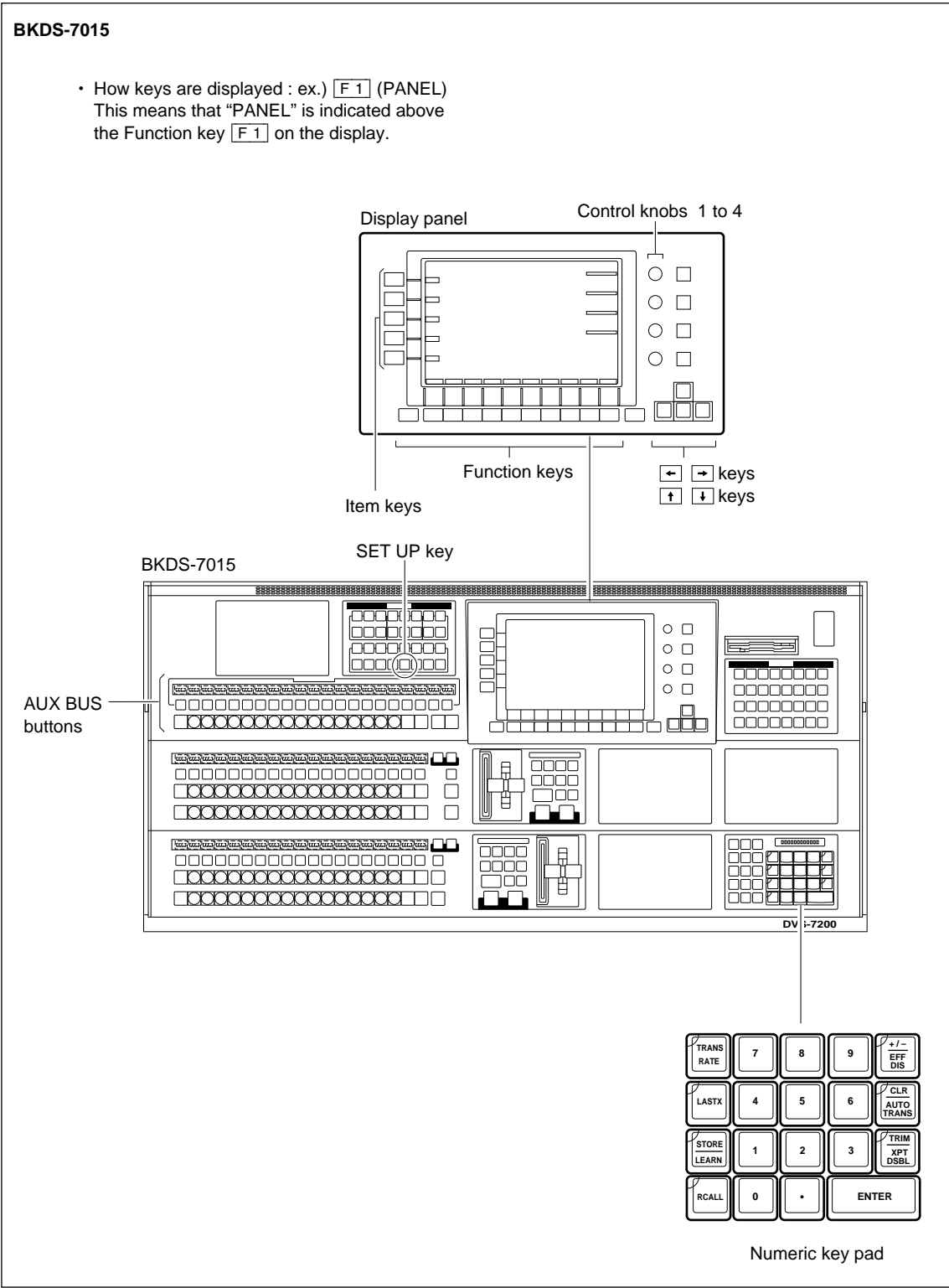
- Signal format (D2-525, D1-525 and D1-625)
- Setting of resume function



- ① : DISK MENU SETUP SAVE
- ② : DISK MENU SETUP LOAD
- ③ : SETUP MENU BACKUP
- ④ : POWER ON or SETUP MENU RESET (RESUME : OFF)
- ⑤ : SETUP MENU ALL CLEAR

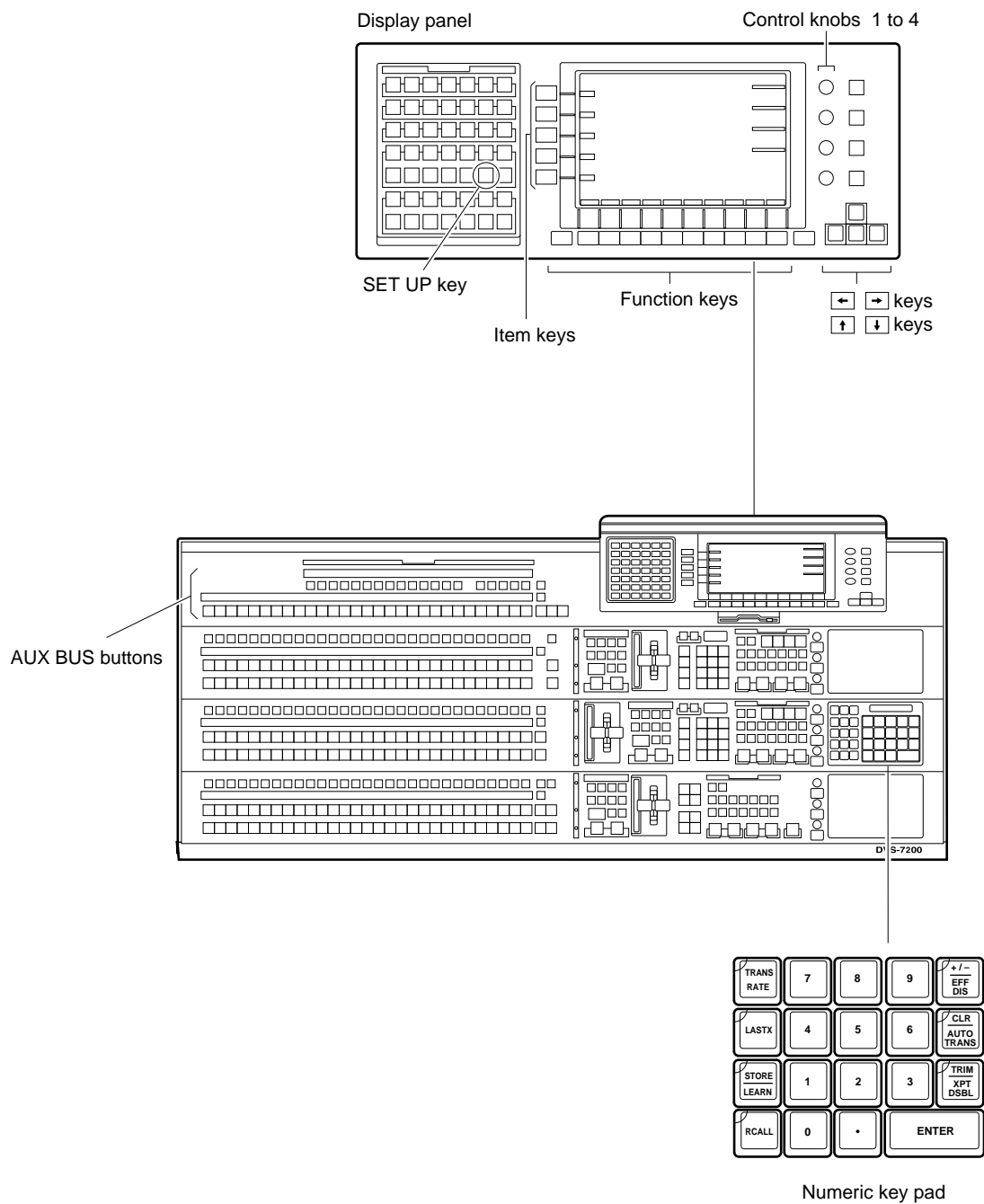
<Keys and Display of Control Panel>

The keys and display are named as follows.



BKDS-7025/7026

- How keys are displayed : ex.) **F 1** (PANEL)
This means that "PANEL" is indicated above the Function key **F 1** on the display.



6-2. Installation of Program (BZS-7040A/7060A)

Before using DVS-7200 system, the operating program of operation software BZS-7040A (option) is installed to the flash memory in the system. Install the operating program of operation software BZS-7060A to the DVS-7250 system.

The program on the flash memory is not cleared by turning the power ON/OFF.

If finishing this process, do not load this process till the version-up of the software is executed.

For the program installation, execute “6-2-1. Down Load of Program” , “6-2-2. Initializing of Data on RAM” and “6-2-3. Initializing of Nonvolatile Memory”.

Note

If executing the program installation, the set-up data on the Nonvolatile memory is initialized to the default status and the data (snap shot and key frame) on the RAM are cleared.

When executing the version-up of the software except for the first program installation, execute the following processes.

- Before the program installation is executed.

Save the set-up, snap shot and key frame effect into a floppy disk.

- After the program installation is finished.

- (1) Load the saved set-up, snap shot and key frame data from the floppy disk.
- (2) Save the loaded set-up datum into the nonvolatile memory same as “6-3-4. Saving Set-up Data to Nonvolatile Memory”.

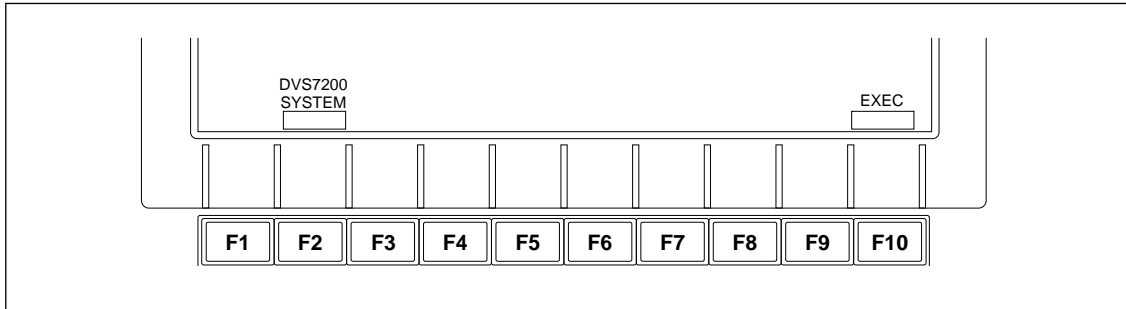
For details of these processes, refer to user’s guide BZS-7040A/7060A.

6-2-1. Down Load of Program

- (1) Insert “OPERATING PROGRAM 1” (Switcher software) to the floppy disk drive.
- (2) In the set-up menu screen, press the keys on the display panel in the following sequence.

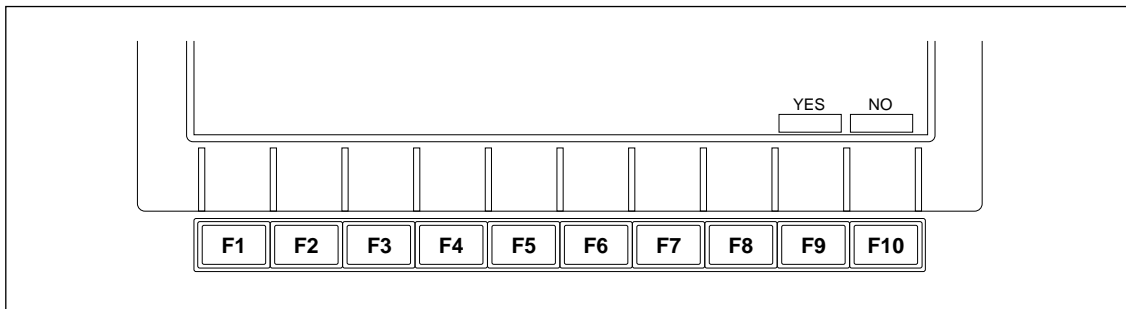
SETUP, **1** (SYSTEM), **F 1 0** (INSTALL)

The display for the function keys is changed as follows.



- (3) Press **F 2** (DVS7200 or DVS7250) key (to display in the reverse), then **F 1 0** (EXEC) key.

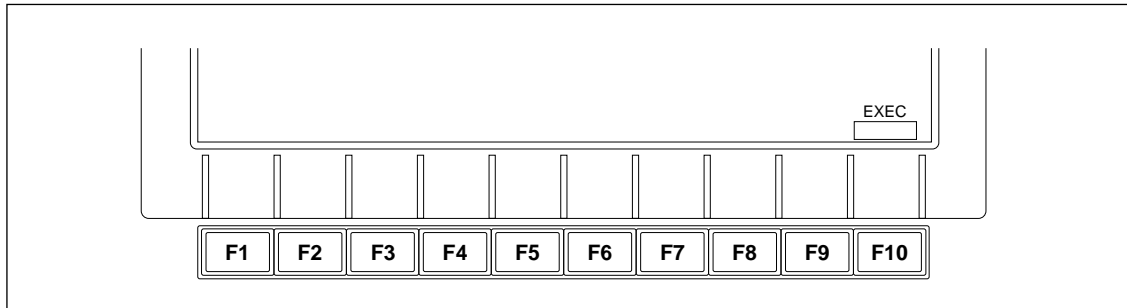
“Do You Want to Load the OPERATING PROGRAM ?” is indicated on the display, and the display for the function keys is changed as follows.



- (4) Press **F 9** (YES) key.

The loading of the program starts.

- (5) When loading is completed, “Load Complete. Insert the OPERATING PROGRAM 2.” is indicated on the display, and the display for the function keys is changed as follows.



- (6) Insert the OPERATING PROGRAM 2 (Control panel software) to the disk drive, and press **F 1 0** (EXEC) key.

Loading starts.

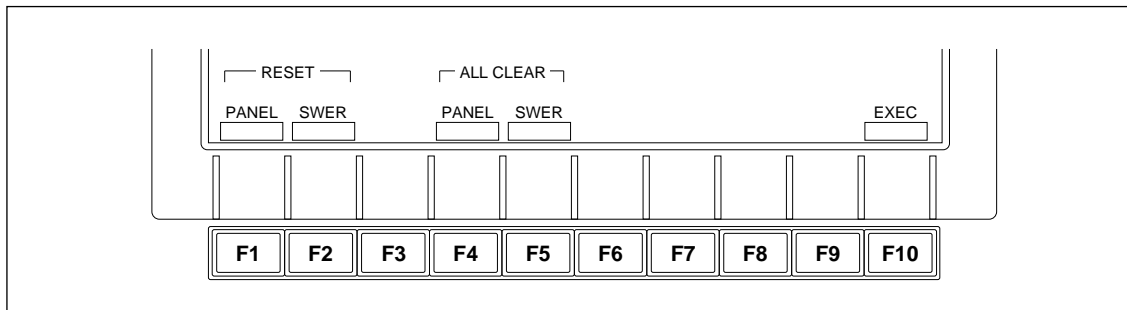
- (7) When loading is completed, all datum of the switcher, and control are cleared.

6-2-2. Initializing of Data on RAM

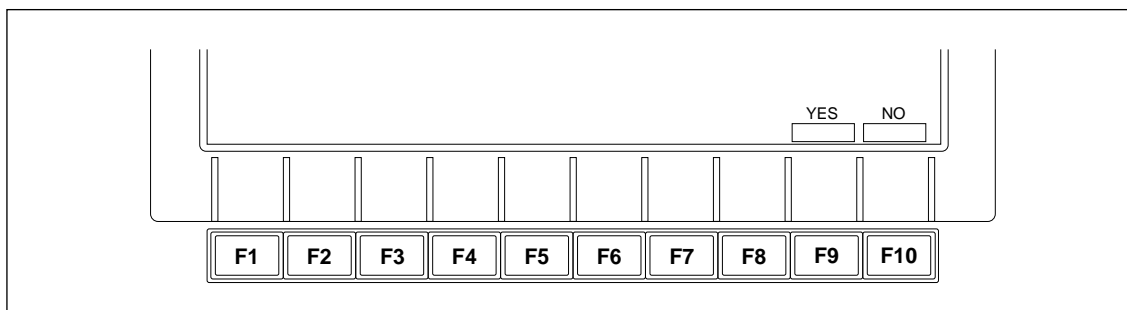
- (1) In the set-up menu screen, press the keys on the display panel in the following sequence.

SETUP, **1** (SYSTEM), **F 6** (INITIALIZE)

The display for the function keys is changed as follows.



- (2) Press **F 4** (PANEL) key (to display in the reverse) and **F 5** (SWER) key (to display in the reverse), then **F 1 0** (EXEC) key. The display for the function keys is changed as follows.



- (3) Press **F 9** (YES) key.

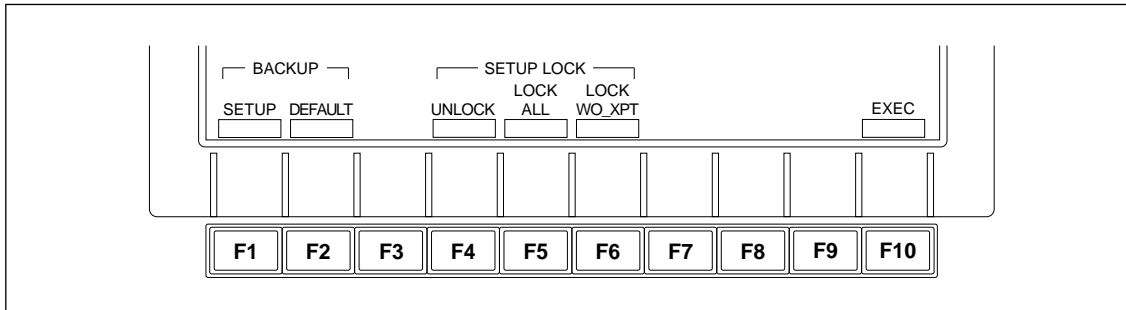
The data on the “RAM” is initialized, and all data are reset to the factory setting.

6-2-3. Initializing of “Nonvolatile Memory”

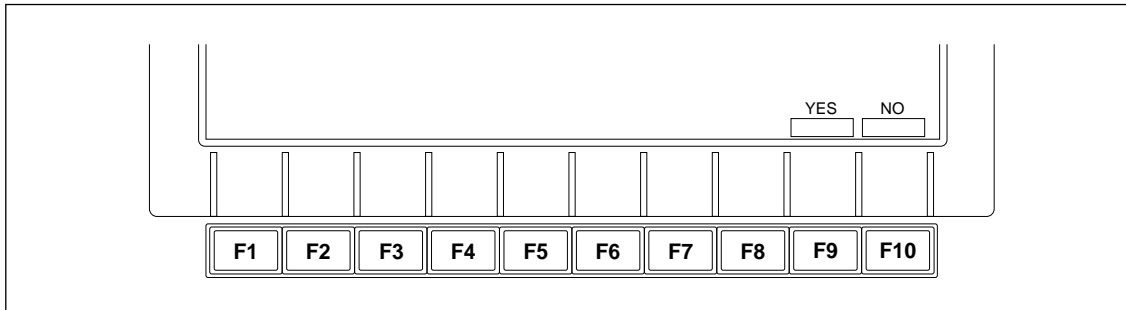
- (1) In the set-up menu screen, press the keys on the display panel in the following sequence.

SETUP, **1** (SYSTEM), **F 5** (BACKUP)

The display for the function keys is changed as follows.



- (2) Press **F 1** (SETUP) key (to display in the reverse) and **F 2** (DEFAULT) key (to display in the reverse), then **F 1 0** (EXEC) key. The display for the function keys is changed as follows.



- (3) Press **F 9** (YES) key.

The data on the “RAM” is written into the “Nonvolatile memory”, and the “Nonvolatile memory” is initialized.

6-3. Set-up

The processes to construct the system are described below.

Basically set up in the following sequence.

For any process that does not need to change the selection exists, no problem that the process is not re-changed in this selection.

1. Confirmation of the Software Version
2. Setting of the Signal Format
3. Setting about System

DVS-7200A has many set-up systems besides these settings. And the contents of the set-up can be saved to the floppy disk. For more details about contents and operation, refer to the following user's guide (option).

User's Guide : BZS-7040A (for DVS-7200 System)
BZS-7060A (for DVS-7250 System)

Note

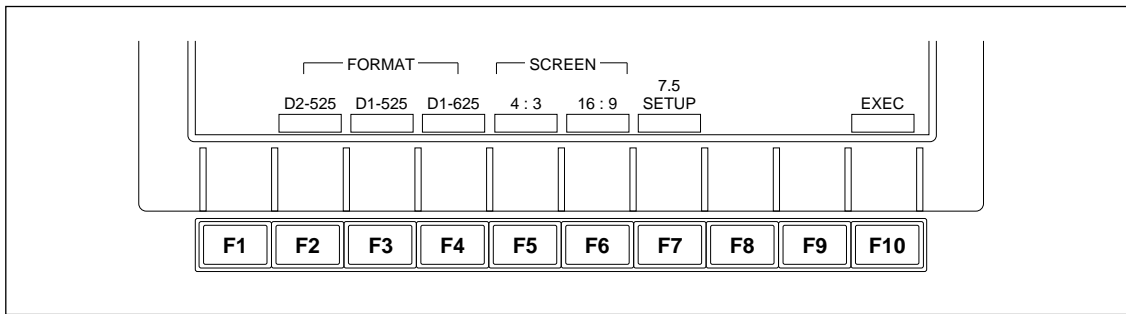
If interrupting or terminating the set-up and saving the data into the Nonvolatile memory, execute "6-3-4. Saving Set-up Data to Nonvolatile Memory".

6-3-1. Confirmation of the Software Version

- (1) In the set-up menu screen, press the keys on the display panel in the following sequence.
`SETUP`, `1` (SYSTEM), `F 7` (INFORMATION)
 The software's and the "ROM"'s versions installed to each product are displayed.
- (2) Confirm that their versions.

6-3-2. Setting of the Signal Format

- (1) In the set-up menu screen, press the keys on the display panel in the following sequence.
`SETUP`, `1` (SYSTEM), `F 3` (SYSTEM SETUP), `F 3` (SIGNAL FORMAT)
 The display for the function keys is changed as follows.



- (2) Press the key that is applicable to the signal format of the system among `F 2` through `F 4` keys, then `F 1 0` (EXEC) key.
 The system is reset (The same status when turning power ON.) and the system is changed to the selected signal format.

D2-525: The composite system of the 525 numbers of scanning lines

D1-525: The component system of the 525 numbers of scanning lines

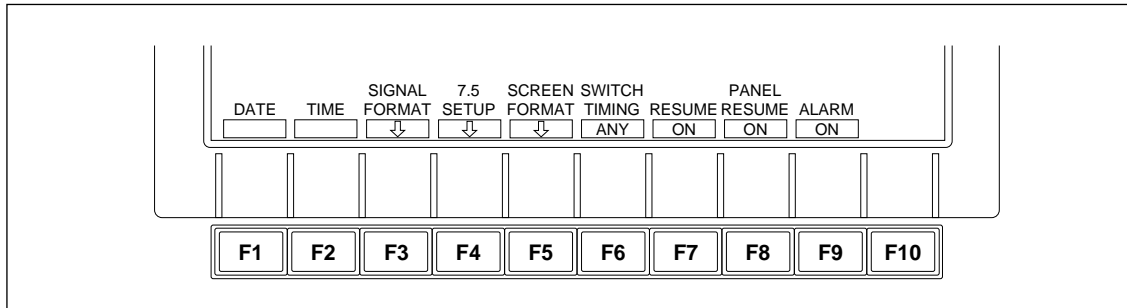
D1-625: the component system of the 625 numbers of scanning lines

6-3-3. Setting about the System

- (1) In the set-up menu screen, press the keys on the display panel in the following sequence.

SETUP, **1** (SYSTEM), **F 3** (SYSTEM SETUP)

The display for the function keys is changed as follows.



- (2) Press **F 1** (DATE) key, and enter the date from the numeric keypad.

ex.) When setting to October 31, 1995, press the keys in the following sequence.

1, **0**, **.**, **3**, **1**, **.**, **1**, **9**, **9**, **5**, **ENTER**

- (3) Press **F 2** (TIME) key, and enter the time from the numeric keypad.

ex.) When setting to 2:15 p.m on time, press the keys in the following sequence.

1, **4**, **.**, **1**, **5**, **.**, **0**, **ENTER**

In this case, pressing last **0** key can be omitted.

- (4) Press **F 4** (7.5 SETUP) key.

The display for the function keys is changed as the display of “6-3-2”.

If the 7.5 IRE set-up is added to the output of the internal generating signal, press **F 7** (7.5 SETUP) key to select to the ON.

(The component system has not this setting.)

- (5) Press **F 5** (SCREEN FORMAT) key.

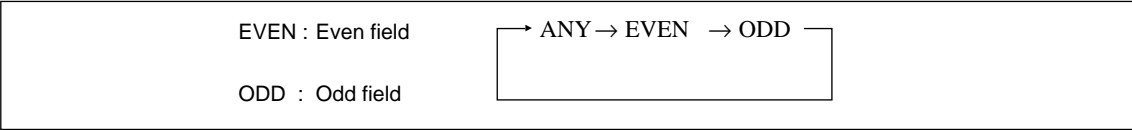
The display for the function keys is changed as the display of “6-3-2”.

If the select to the 4 : 3 screen mode, press **F 5** (4 : 3) key and if the select to the 16 : 9 wide screen mode, press **F 6** (16 : 9) key.

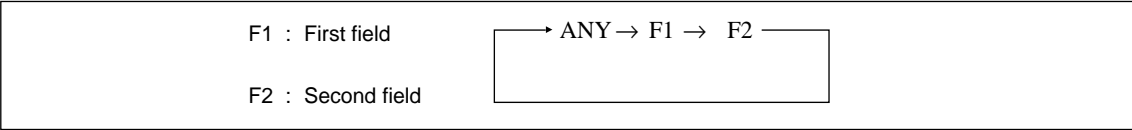
- (6) Press **F 6** (SWITCH TIMING) key to select the timing (field) which switcher switches.

Press the key every time, the display is changed in the following sequence.

In the case of the composite system



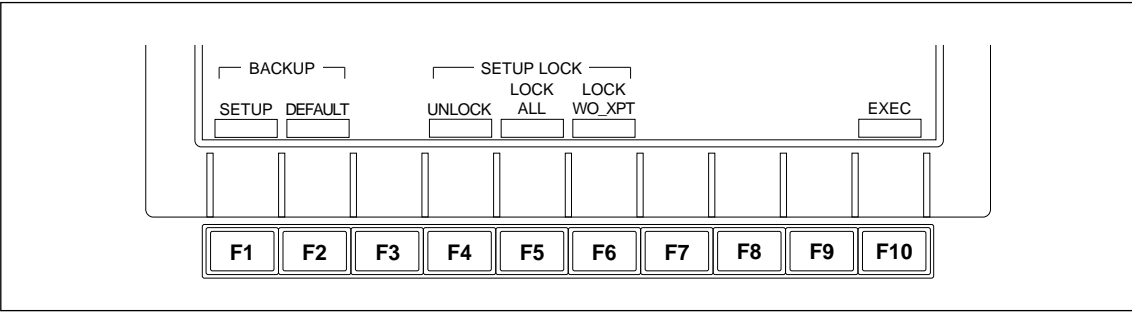
In the case of the component system



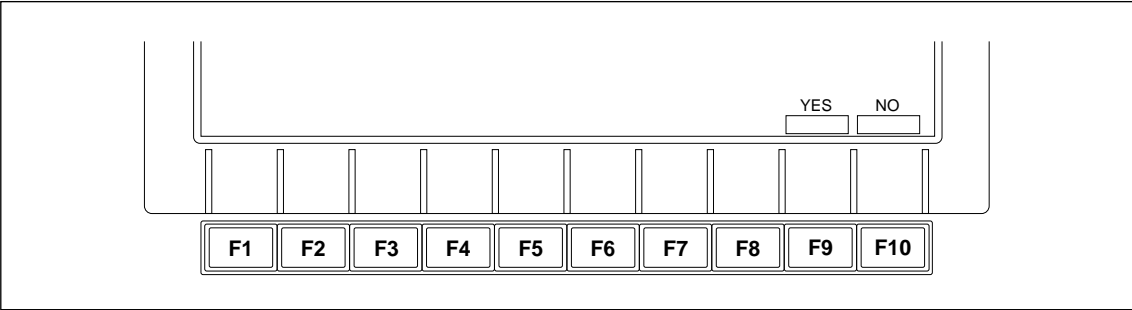
- (7) Press **[F 7]** (RESUME), **[F 8]** (PANEL RESUME) key to select the resume function.
For the unit picks up where you left off when turning the power back ON, select the resume function to the ON. For the resume function is selected to the OFF, the unit starts up the saved status in the “6-3-4. Saving Set-up Data to Nonvolatile Memory”.
- (8) Press **[F 9]** (ALARM) to beep alarm when error has been detected. An error message is displayed on the menu screen even if the alarm function is set to OFF.

6-3-4. Saving Set-up Data to Nonvolatile Memory

- (1) In the set-up menu screen, press the keys on the display panel in the following sequence.
[SETUP], **[1]** (SYSTEM), **[F 5]** (BACKUP)
The display for the function keys is changed as follows.



- (2) Press **[F 1]** (SETUP) key (to display in the reverse), then **[F 1 0]** (EXEC) key. The display for the function keys is changed as follows.



- (3) Press **[F 9]** (YES) key.
After the backup is completed, “BACKUP OK” is indicated on the display.

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SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 3.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 5.25 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 20 V AC range are suitable. (See Fig. A)

